Harold M. Tolo

EFFECTIVE REGULATION OF PUBLIC UTILITIES

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EFFECTIVE REGULATION OF PUBLIC UTILITIES

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BY

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PREFACE

This book has been written from the "firing line" of regulation. It is largely the result of an intimate contact with the efforts at regulation during the past fifteen years. It attempts to present not only the principles and usual methods of regulation, but also the difficulties that have greatly impeded the work, as well as a plan which would render rate making a definite and practically an automatic process.

The task of regulation has been delegated mostly to commissions. While they have been concerned with the entire field of regulation, their efforts have centered on rate making. They have had little time for much else because of the constant struggle with vague principles, indeterminate facts, undefined methods, and cumbersome rate procedure. They have been practically overwhelmed with the repetitious routine, without ever finally settling either principles, policies or facts with which they have had to deal. In every rate case they have been confronted with a new battle over the same grounds that had been fought over time and again. Consequently they have largely left untouched what should be the chief constructive purpose of regulation: to promote service and economy of operation.

That the first need is to cut through the tangle of present rate procedure, can hardly be disputed. Everyone who has actively taken part in rate cases has been irritated by the large waste of effort and the high degree of futility in the result. Both sides have felt the need of definiteness as to principle and

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policy, exactness as to facts, and promptness as to action, and they will readily accept the fundamental proposal of this work.

It is of interest to note that while the manuscript was in the hands of the printer, a report on "Giant Power" was issued by the Giant Power Survey Board to the General Assembly of the Commonwealth of Pennsylvania. This report is concerned with only one utility, the production and distribution of electricity, but it brings out the same difficulties discussed in this book, and comes to the same conclusion that there must be an exact basis of rate making as to policy, methods and facts, if regulation is to cope successfully with the growing complexities of the industry. Governor Pinchot's recommendations for legislation are in line with the principles presented in these chapters.

Everyone, I believe, who will give serious and intelligent consideration to the problem, will come to the same conclusion. In the matter of establishing a rate base for existing investment, there may be honest difference of opinion as to how or on what exact basis the valuation of the properties should be made. But as to the future, it seems clear, there can be no intelligent dispute: we must proceed with definiteness of policies, methods and facts.

The book has been written not only *from* but *for* the "firing line." I hope that it may serve the large number of accountants, economists, engineers and lawyers to a clearer and more vivid understanding of what is involved in regulation and what is needed to make it effective. While the bulk of my contact has been on the so-called public side of utility litigation, my interest has always been that of an economist, with attention centered on public policy and workable administration. I hope, therefore, that this volume will be of constructive use not only to commissions, municipalities, and other public bodies but also to investors, to the utilities themselves, and to the several professional groups interested in the work of regulation.

I have attempted also to present the subject matter so as to make it suitable for textbook use in college and university courses dealing with regulation. My first effort at systematic presentation was in a course of lectures at Columbia University during the academic year 1921-1922, although I had previously lectured on regulation at Princeton and Cornell Universities. Some of the ideas have appeared from time to time in articles in the *American Economic Review*, the *Political Science Quarterly* and other technical journals.

In discussing valuation, I have inevitably come upon questions of law and have had to discuss court decisions. I wish to state, therefore, that I am thoroughly aware of the pitfalls that an economist or other layman encounters in venturing into the domain of law. But there was no keeping out. My approach has been that of an economist, but I could not avoid the legal complications in which the economic problems are involved. I believe, however, that my analysis is reasonable, and it presents the decisions in the light of economic and financial facts. I may point out, however, that a lawyer writing on problems of regulation is likewise forced to pass beyond his own strict field into economic grounds. The fact is that intelligent discussion requires broad experience and thought on all sides of regulation, and the various professional groups must meet on the common ground of sound public policy.

It has not been feasible to give credit for special ideas. I have tried to work out systematically a solution to a complicated problem which many have struggled with and have helped to solve. I do, however, wish to express obligation to former associates in various departments of the Public Service Commission of the State of New York, First District, during my work for several years as statistician and Chief of the Division of Accounts. Among these I wish to mention Mr. E. M. Deegan and Mr. Jacob Goetz, then assistant counsels, and Mr. Godfrey Goldmark, then counsel for the Commission. For the past five years, while I have been retained as financial adviser to the Corporation Counsel of the City of New York in public utility litigation, I have derived special benefit in my work and repeated discussions with Assistant Corporation Counsels M. M. Fertig and E. J. Kohler, who conducted many of the important utility cases; and particularly I have felt encouraged by the deep interest and public attitude in utility matters on the part of the Hon. George P. Nicholson, Corporation Counsel of the City of New York.

Finally, my chief obligation rests with Mr. Nathaniel Gold, who has been an unusually valuable assistant for several years. He not only helped in the preparation of the manuscript but has served as keen and impartial critic in the various phases of the work.

JOHN BAUER.

New York City,
June 1, 1925.

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EFFECTIVE REGULATION OF PUBLIC UTILITIES

EFFECTIVE REGULATION OF PUBLIC UTILITIES

CHAPTER I

THE NATURE OF PUBLIC UTILITIES

1. Definition of public utilities. 2. General regulation and special control. 3. The development of regulation. 4. The right of eminent domain. 5. Special franchises. 6. Monopoly conditions. 7. Public interest independent of special privileges or monopoly. 8. Importance of service and abuses in the industry. 9. Public interest illustrated in recent developments. 10. Extension of regulation. 11. Purpose of the book.

1. Definition of Public Utilities

Public utilities are industries in which the right of special public regulation has become firmly recognized. It is not necessary to set forth a complete list of the various industries embraced within the concept of public utilities. For the sake of definiteness, however, we may briefly state that the term includes steam railroads; local and inter-urban electric railways; gas and electric corporations; water and steam companies; telephone and telegraph companies. Other industries will readily suggest themselves in which the right of public regulation has been definitely recognized. We shall use the term in its broad sense, to comprehend all industries over which the right to regulate has been established and efforts at regulation introduced.

2. General Regulation and Special Control

It is worth while at the outset to distinguish clearly between the special control over public utilities and the regulation of industries in general. Under the police power, a state has the right to regulate any business. This sort of regulation has to do with safety devices, conditions of health and well being of employees, and, with more or less defined limitations, the general welfare of the public.

The regulation of public utilities, however, is of a different sort altogether. It embraces the right to control the very organization and conduct of the enterprise. It is concerned not only with safety and welfare, but with the rates charged the public and the returns or profits realized by the business, as well as with the products or services furnished. In the so-called unregulated business the right to such interference is not recognized. After all reasonable provisions for the public welfare have been made, ordinary business is still free to furnish such services or products as it desires, charge such prices or rates as it is able to exact, and conduct its financial management according to its own purposes or contractual arrangements.

3. The Development of Regulation

The right to regulate in the special sense was first recognized in the celebrated case of *Munn v. Illinois*, decided by the Supreme Court of the United States in 1876. This case involved the right of the Illinois general assembly to prescribe maximum charges for the storage and handling of grain by Chicago elevators. The new power attempted by the state was a radical departure from existing policy. The act was sharply contested and carried to the Supreme Court of the United States. The power was upheld, and the basis laid for public utility regulation. The principle itself has never been questioned since.

About the time when the Illinois warehouse statute was enacted, there was widespread legislation throughout the country, especially through the newly developed western states, for the regulation of railroads. This was the period of so-called Granger legislation, when almost spontaneously new statutes for railroad regulation were enacted. Of the seven Granger cases decided by the Supreme Court in 1876, all but the *Munn* case concerned railroads.[1] Thus, active regulation at that time chiefly centered around the railroads. It finally resulted in the passage by Congress in 1887 of an Act to Regulate Commerce, or, as it is called, the Interstate Commerce Act.

During the 1880's serious problems developed also in connection with other public utilities, particularly street railways. The rapid growth of cities created a demand for adequate transportation at reasonable rates. Similarly other services became important, and a demand for the extension of regulation developed. Consequently, after 1900, the policy of regulation expanded rapidly, and in the succeeding decade public utility statutes with commissions were provided in most of the states.

4. The Right of Eminent Domain

The basis of regulation, as established by the *Munn* decision, and repeated in all of the leading cases where the same question arose, was the special public interest in the particular industries. It is worth inquiring into this special interest. What are the particular qualities, or the extraordinary conditions, which set an enterprise apart from others not subject to regulation? What constitutes the special interest which transforms a business into a public utility?

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[1] 94 U. S., Munn v. Illinois, 113; Chicago, Burlington & Quincy R. R. Co. v. Iowa, 155; Peik v. Chicago & Northwestern Ry. Co. v. Ackley, 179; Winona & St. Peter R. R. Co. v. Blake, 180; Southern Minnesota R. R. Co. v. Coleman, 181; Stone v. Wisconsin, 102.

Various answers have been made from time to time to these questions. In court opinions, sometimes one view is reflected, sometimes another. There has been, however, a frequent tendency to give a technical answer; particularly to find the reason for regulation in the special privileges granted to the regulated concerns.

It is true that most of the utilities do have special legislative or public privileges, not enjoyed by other industries. The railroads, for example, are granted the right of *eminent domain,* under which they are empowered to condemn private properties for their needs. The right of way of the railroads has been provided to a large extent through the exercise of eminent domain, that is, through the condemnation of private property. This right has been enjoyed also by other utilities whenever private property had to be acquired in order to provide the required service. It is used wherever the facilities must occupy private lands in order to connect consumers or to extend the service from one community to another.

5. SPECIAL FRANCHISES

Most of the local utilities have the privilege of a special franchise. This authorizes the grantees to use the streets or other public places for the location of their facilities or for other purposes of operation. Thus, street surface railroads are mostly located in the streets and are operated through them. The gas and electric companies lay their mains and cables under the streets, through which they furnish gas or electricity to the consumers.

Writers have frequently pointed to the special franchise as the fact which creates the particular public interest and upon which the right to regulate is based. The same view has been indicated in court opinions, although it has not been definitely and consistently held by the courts as the fundamental reason for regulation.

6. Monopoly Conditions

Another factor which has been regarded as fundamental to public utilities is that of monopoly. The view is that in ordinary business there is widespread competition, which in itself furnishes adequate protection for the public. Where there is competition, both the quality of the service and the prices charged to the consumers are automatically determined with fairness to the public, without any attempt at regulation. The price of the service is in a large measure determined by the cost, including a fair return on the investment, and the public is treated fairly. But if in any business, competition is eliminated, each company is able not only to determine the conditions and quality of the service but also to fix the price. Its chief consideration is not fairness to the public but its own financial interest. Consequently, the argument is, wherever the condition of monopoly obtains, a special public interest is created, justifying regulation to provide the protection that is otherwise afforded the public under competition.

7. Public Interest Independent of Special Privileges or Monopoly

The fundamental characteristic of a utility is, after all, very simple. It is set forth clearly in the *Munn* case. The public interest emerges with the growing importance of the business itself, as large sections of the population become more and more dependent upon its products or services. There is in this development a gradual creation of public interest which sets apart the industry from others for particular public control to safeguard this interest.

A broad survey of the development of regulation will show that the fundamental characteristic of any business subjected to regulation, is its importance to the community. This was the occasion of the earlier railroad legislation. With the rapid growth of the west, railroad connection with the business centers and markets of the east became essential to the western communities. The well being of large sections of the country depended upon reliable service and reasonable rates. Soon after the Civil War, a profound feeling gained headway rapidly that there were many railway abuses. This created a demand for regulation, and doubtless this public insistence brought about the recognition of a public interest, not the technical fact that the railroads exercised the right of eminent domain.

In the same way the extension of regulation to street railways in the cities did not grow out of the fact that special franchises had been granted to the companies, although this undoubtedly facilitated the placing of the companies under public control. But the underlying condition which brought about regulation was the increasing necessity of local transportation for the general welfare, together with the intense feeling that there had been grave abuses in street railway operation and finance. The same general condition led to regulation of other utilities in which there had developed great importance and abuses.

The correct line of causation is not that the special rights rendered the street railways and other concerns public utilities, but rather that the extraordinary privileges could not be granted to corporations other than public utilities. It seems to be a clearly established legal principle that the right of eminent domain and special franchises cannot be granted except for public purposes; and no purpose can be viewed as public unless the services rendered are of such importance as to warrant the privileges. This means that a special public interest already exists before the rights are granted; hence, the basis of public control precedes, and is independent of, the special grants. These can be conveyed only to an already recognized utility.

Similarly, there is no doubt that monopoly has been an important factor in the development of regulation. But broad consideration of the facts leads to the conclusion that the basic reason for regulation is not the existence of monopoly itself but the importance of the service furnished, whether by a monopoly or by competitive concerns.

Regulation is exercised in fields where there is both direct and indirect competition. There is probably no utility which is wholly free from competitive factors. There are gas and electric companies which operate mains through the same streets and compete actively for consumers in the same locality; yet the right to regulate exists, and the companies are recognized as utilities. Moreover, not all concerns with extensive monopoly powers are considered utilities. In the less important industries there are many monopolies or near monopolies in which there is no regulation. Also among many important industries which are somewhat monopolistic, the right to regulate has not been established. This is true particularly in the production and distribution of steel, copper and other basic commodities.

8. IMPORTANCE OF SERVICE AND ABUSES IN THE INDUSTRY

The recognition of a special public interest emerges only when the services rendered are of paramount importance; then there is developed the feeling of extreme dependence upon the particular industry, with the demand for regulation. This feeling appears particularly when there are grave abuses in the conduct of the business. Such a development can now be readily observed in the production and distribution of coal. For several years there have been recurring crises, which have caused widespread dissatisfaction and suffering. Consequently, there has been a rapidly growing demand by the public to bring the coal industry under regulation. There is an intense feeling of dependence upon the industry and grave discontent with conditions; consequently active regulation may be established within a comparatively short time. A public utility is in the making, and yet the business is one in which ordinarily there are broad competitive factors and in which no rights of eminent domain or special franchises have been granted. The public interest, nevertheless, has been rapidly emerging, and with another serious crisis, it may be legally recognized. It has arisen from importance and discontent.

The public interest appears most clearly where there are both importance of service and a condition of monopoly. But even where there is competition, if the service is of great importance, the very abuses of competition may result in the assertion of a public interest and in regulation for the purpose of eliminating competition and establishing monopoly. The substance of public interest, therefore, is importance to the welfare of large groups in society. Any industry which assumes such importance and does not maintain satisfactory relations with the public establishes thereby the basis for regulation.

9. Public Interest Illustrated in Recent Developments

The view just presented appears also in the development of various other industries during recent years. In the large cities, for example, the public welfare has become increasingly dependent upon a safe and adequate milk supply at a reasonable price. In the distribution of milk there is unquestionably competition; yet the supply has been frequently interrupted, and a strong feeling has been created that the public has been arbitrarily subjected to exorbitant prices. It is quite likely, therefore, that in comparatively few years the distribution of milk will become a recognized public utility and placed under regulation.

In recent years a housing emergency has existed in a number of communities. During the war there was not only an interruption of building but a rapid influx of population to the large cities. Consequently there followed tremendous demand for existing houses, and rents were raised to unusual heights. As a result, the State of New York, in 1920, enacted laws limiting the rents that could be charged to tenants. By this act there was a recognition of public interest in the renting of housing facilities, and regulation of a public utility was established.

The rent laws were fought in the courts as unconstitutional, but they were sustained not only by the highest court of the state but by the Supreme Court of the United States. This legislation is particularly illuminating in a study of fundamental conditions which lead to the recognition of a public utility. Under ordinary circumstances there is wide competition in the renting of houses, and the public is protected in service and charges by the forces of competition. But with the special conditions created during a short period of years, an intense public feeling emerged demanding and obtaining the regulation of rents. This legislation may be only temporary, but it clearly demonstrates the fact that public importance creates the interest which finally results in regulation.

10. EXTENSION OF REGULATION

A broad survey will show that in various directions there is a growing feeling of dependence upon certain industries. This signifies a gradual emergence of public interest and an increasing demand for special regulation of such industries. It will produce unquestionably during the next twenty-five years a great expansion in the field of regulation.

In the face of this inevitable extension of regulation, it is necessary to understand clearly what is involved. We face two distinct problems: (1) Whether or not a particular extension is desirable; and (2) how the desired regulation may be effectively administered. With the first problem this book will not be especially concerned. Every case will present a different set of facts, and must be determined on its own merits. Undoubtedly there will be demands for regulation where the public would not be benefited. It is easy to exaggerate the evils in an industry and to expect much more from regulation than can be realized. Each proposed extension should be carefully studied, so as to determine clearly the evils that exist and whether they can be remedied. This requires intelligent investigation and dispassionate analysis of the facts. But, whatever the course pursued, we may safely assume rapid extension of regulation. This is inevitable, and we may hope that it will follow the reasonable requirements of public interest.

We shall be concerned almost exclusively with the second problem: How regulation may be effectively maintained. This has an immediate and forceful bearing upon existing regulation, and is a determining factor in any proposed extension. It is futile to attempt regulation unless it can be successfully administered.

11. Purpose of the Book

The existing policies and methods, as will appear in later chapters, have been too vague and unwieldy. Consequently they have caused a large amount of unnecessary effort, great confusion, and undue antagonism between the companies and the public. Regulation has been tremendously expensive, without bringing satisfactory results.

During recent years there has been a growing feeling of disappointment with regulation. The question has been raised frequently whether the huge costs have been justified by the results. This question will become more and more insistent so long as the present unsatisfactory situation continues. Our inquiry will therefore be directed almost entirely to policies and methods.

The purposes of this book are, to consider critically the existing policies and methods by which regulation is attempted; to show the inadequacy and deficiency of existing machinery; and to suggest constructive measures for a realization of the fundamental purposes of regulation. Effective policies and methods are essential not only to meet the requirements of present regulation but to provide for the inevitable extension to other industries.

CHAPTER II

THE PURPOSES OF REGULATION

1. Three principal purposes of regulation. 2. Proper service. Three phases. 3. Quality and quantity of service. 4. Extension of service. 5. Improvements in property and methods. 6. Rates follow service. 7. Must take the "lean with the fat." 8. Financial stability. Overcapitalization. 9. Financial manipulation. 10. Control of new security issues. 11. Control over holding companies. 12. Revision of past security issues. 13. Proper accounting a minor purpose. 14. Classification of accounts. 15. Balance sheet accounts. 16. Revision of balance sheet accounts. 17. Operating accounts. Revenues. 18. Three classes of deduction from revenues. Operating expenses. 19. Taxes. 20. Distribution of returns. 21. Third group needs clarification.

1. THREE PRINCIPAL PURPOSES OF REGULATION

The principal purposes of regulation as expressed or implied in public utility laws are three-fold: (1) Reasonable rates; (2) proper service; and (3) financial stability. The most important minor purpose, incidental and necessary to the major, is the control of accounting methods.

Historically the strongest force for regulation was undoubtedly the demand for reasonable rates, including the prevention of discrimination. The original Interstate Commerce Act dealt with rates almost exclusively. Likewise, a large proportion, if not the bulk of the effort, of commissions and courts has been directed toward rates. Moreover, the chief difficulties of all regulation, including that of service, finances and accounting, have been due to the fact that effective principles and methods have not been established in connection with rate making.

The main purpose of this work will be to set out the difficulties in existing rate making practice, and to show how effective rate regulation may be made practically self operative. But this analysis will of necessity involve all the other purposes of regulation, because the success or failure of rate making determines almost directly the corresponding success of regulation in other respects.

The consideration of rate making will be deferred to succeeding chapters. This chapter will be devoted to the other objects of regulation.

2. PROPER SERVICE. THREE PHASES

The second principal purpose of regulation is proper service. This, however, is intimately connected with reasonable rates. Often the single statement is made that the public is entitled to proper service at reasonable rates. The two ideas are inter-dependent. While they may be considered separately, their close relationship must not be overlooked. Merely to maintain or establish low rates is of doubtful advantage to the public, if the corporation is thereby prevented from furnishing service which would meet the requirements of every day life. Almost invariably people are willing to pay the necessary cost of adequate and proper service.

The power of requiring public utilities to provide service has been firmly established in most respects. The more important phases of this power are the regulation of (1) quality and quantity of service, (2) extension of service, (3) improvements and renewals of property, and more economical processes of operation.

3. Quality and Quantity of Service

In reference to the first phase, the power to regulate is, within broad limits, absolute. The regulatory authorities may prescribe the standards of service, both as to quality and quantity, to be provided by the corporations. This aspect of service regulation takes the form, for example, of prescribing the standards of gas supply. Gas must be delivered at fairly constant pressure at any time of the day. It must also conform to specified illuminating or heating qualities. In street railway transportation the commissions have the power to require service according to the shifting travel during the day. The companies are required to increase the number of cars operated as the volume of traffic increases, and are permitted to reduce the number as the volume diminishes. Commissions have also authority to prescribe regulations as to heating, ventilation, cleaning, safety devices, and other conveniences reasonably required for the welfare of the traveling public.

Quality and quantity of service to a large extent are inter-dependent. Sometimes one view predominates, and sometimes the other. For the most part, however, they are treated together.

4. Extension of Service

The power of requiring an extension of service is not so absolute or so clearly defined as the right to prescribe standards of quality and quantity. But for the most part the legislatures and, in turn, the commissions, do have the right to require extensions of operation for the convenience of the public.

The right to require extensions must be regarded from the standpoint of whether they are within the limits of the company's franchise or extend beyond such limits. In the first case there is no doubt that the commissions may order the companies to extend their service wherever reasonably needed within the region covered by the franchise. The situation, however, is materially different when the requirements involve service outside of the franchise area. But even in such cases, extension requirements may be made based on the theory that the franchise really covers the municipality as a whole. This is possible particularly where a single company operates within a municipality but has specified franchises only through certain streets or parts of the city.

5. IMPROVEMENTS IN PROPERTY AND METHODS

The third phase of service regulation includes the power to require important renewals and improvements in plant and equipment, as well as the introduction of more economical processes of operation. These features are treated together because in a large sense they involve the same general principle of obtaining service for the public at minimum cost.

As a matter of public policy, the commissions should have the right to require any improvements both in physical facilities, and in organization and management, which will work for economy and reduction in cost. It is well to state here, although this matter will be specially considered in a later chapter, that public utilities are not subject to the normal forces that work for improvements in ordinary competitive and unregulated business. They are able to place practically all costs upon the public and are not directly penalized for inefficiency. For this reason they are not constantly spurred to better management, and tend to maintain unprogressive standards of operation. To counteract this condition, the commissions should have direct power to set standards and to require all such improvements as may be reasonably necessary for the public service. Wherever costs can be reduced by improvements in facilities or by changes in processes of operation, the commissions should have the power to issue the requisite orders.

Where reasonable improvements are necessary within the franchise area, the commissions do have the right to require their installation. This pertains particularly to physical facilities which will provide greater convenience to the public. The power, however, to require the installation of more economical plant and equipment is not quite so clear. For example, in the production of electricity it is not at all certain whether a commission could order a company to install improved generating equipment where sufficient units of a poorer type already exist. For the purpose of economy of operation, with a corresponding possible decrease in rates, the commissions should have power to require such improvements. But this power has not been definitely established.

6. Rates Follow Service

But where the power to regulate service, both in the narrower and broader aspects, has been recognized, it is, for the most part, absolute, and does not depend upon the financial condition of the company. Proper service is recognized as a fundamental requirement, viewed from the standpoint of the public needs, without regard to financial expediency or to the question of rates.

The basic principle is that rates follow service, not the reverse. It is the duty of the commission first to determine whether the services or improvements under consideration are reasonably required. If they are, the commission has the power to issue an order without regard to existing rates or the financial status of the company. If after the improvements have been provided the costs exceed the revenue, there is then a question of proper rate adjustment upon the basis of the service that has been declared necessary by the commission.

This principle is undoubtedly sound and should be even more firmly fixed. To be sure, there must be a limit to arbitrary power; a commission should not be able to require unreasonable service or unjustified facilities and changes in methods of operation. There should always be the right of judicial review of a commission's orders. For the most part, however, within wide limits of reason, whatever service and improvements are fairly needed should be required, and the question of financial ability should be taken up subsequently in connection with rate adjustments. The two questions, however, may well be considered simultaneously, and often are so treated although officially they may be decided separately.

7. MUST TAKE THE "LEAN WITH THE FAT"

Closely related to the principle that service requirements must stand on their own merits, without immediate regard to rates or financial ability, is the generally recognized right of the regulatory body to order a company to furnish a particular service even if by itself this is not remunerative. The company is entitled to a fair return on all of its operations. If it realizes such a return, it is treated justly, even though on some of the business the rates are not profitable.

As frequently expressed, a utility must take the "lean with the fat." While it provides some unprofitable but necessary service to the public, it recoups the loss from the profits of other operations, and obtains a fair average return from the combined business. This is aptly illustrated by a street railway which operates some very profitable lines, and others at a loss, but realizes a fair return from all the operations together. It is not permitted to discontinue the unprofitable routes so long as the service is reasonably needed. It is compelled to balance the losses against what would otherwise appear as excessive returns from the other operations.

The duty of combining unprofitable with profitable service appears in the case of all utilities where uniform rates, or the same rate, must be maintained throughout a municipality or a large district, in spite of variations in the cost of service in different parts of the community or different times of the day or season, or other shifting conditions. This situation appears particularly with street railways, which in the face of all practical considerations can hardly do otherwise than charge a uniform fare throughout a city, without regard to length of ride, density of traffic, peak load conditions, or other factors affecting the cost of transportation. The same situation prevails to greater or less degree with most utilities. Rates cannot be varied minutely according to cost of service, but to a considerable extent must be based on average cost.

But the principle of taking the "lean with the fat" has its own natural limitations, and must be applied with reason. It does not mean that desirable rate classification should not be made where costs can be separated according to classes and where the different rates can be satisfactorily administered. Nor does it mean that losses must be continued for the sake of a few individuals, where they are not justified by consideration for the community as a whole. It is a problem of reasonableness, which must be left largely to the commissions for determination in individual cases.[1] The point here is that reasonable service must be provided even if it is directly unprofitable. After the requisite service has been furnished, the question of rates may be considered; whether a charge for a particular service is adequate or whether the rates as a whole need adjustment.

8. Financial Stability. Overcapitalization

The third major purpose of regulation is to maintain the financial stability of the business. This is carried out principally through the control of security issues. Where there is such control, a public service corporation wishing to raise funds through the issue of bonds or capital stock, must first obtain permission from the regulatory body, to prevent unnecessary burdens against the properties and to safeguard the investors against undesirable or improper securities.

Prior to the institution of active regulation, roughly before 1900, there was no direct control over security issues.[2] The companies were free to issue securities according to their own financial purposes, limited only by the loose restrictions of the general corporation laws. As a consequence there was extensive overcapitalization, or stock watering. This was brought about not only through direct over-issues, but also in connection with the consolidation of smaller properties, where securities of one company were exchanged for those of another, without regard to reasonable cash investment. It was further increased through failure to provide for replacements out of operating expenses. As plant or equipment had to be replaced the cost was often paid out of funds derived from new capital issues instead of out of prior earnings. As a result, the securities of many companies were pyramided far beyond the investment, and excessive fixed charges had to be borne by the properties actually used in operation. This burden became intolerable and inevitably brought about a demand for regulation.

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[1] For further discussion see Chapter XI.

[2] In the case of steam railroads, the Interstate Commerce Commission had no direct control over new security issues prior to the Transportation Act of 1920. The Commission could only inquire into the financial operations after they had taken place, but its sanction for an issue was not required by law.

9. Financial Manipulation

Simultaneously with overcapitalization utility securities were subjected to financial manipulation. Operating expenses were often rigged according to the purposes of the men in control. When the price of a particular capital stock was to be driven down, the operating charges were increased so as to show low returns; then the stock could be purchased far below its intrinsic value. After the acquisition of the stock the manipulation was reversed; the operating charges were diminished, with the result of showing large profits and bringing about a higher price than was warranted. When the maximum price was established, often in an extreme atmosphere of speculation artificially produced, the stock was unloaded upon the innocent public. Subsequently, however, the properties could not possibly sustain the dividend rates established during the period of inflation, and a collapse was inevitable. The innocent investors found themselves in the possession of securities, purchased at a high figure, with little or no value.

Moreover, in the cycle of manipulation, the funds which should have been reserved for operation were dissipated in the processes of developing the sky market. As a result, the properties were stripped of all available cash funds. Finally, when the inevitable crash came, it left the companies at the point where they could not furnish adequate service at reasonable rates. Consequently both the investors and the consumers were injured. This condition, existing widely throughout the country during the 1890's, led during the subsequent decade to the establishment of regulation, not only of service and rates, but also of financial operations.

10. Control of New Security Issues

Thus the public service statutes in a number of states empower the commissions to regulate security issues. New issues are allowed only for the purpose of acquiring additional properties, or for the refunding of previously existing obligations, or the reimbursement of the company's treasury for expenditures already made for the properties. And special provisions are made against the issuance of securities to pay for the renewals of property.

Besides the direct regulation of new security issues, limits have been placed upon the transfer of existing capital stock, particularly between companies or groups of companies, where a substantial transfer of ownership from one corporation or group of interests to another is involved.

The statutes sought to prevent future overcapitalization either directly or indirectly. For new security issues the basis was to be definitely actual investment without inflation through the grant of bonuses, or the sale at large hidden discount, or over-valuation of property purchased or acquired through consolidation or reorganization. Moreover, the expenditure of capital funds are sometimes placed under special accounting control of the commission, with regular reports as to expenditures and unexpended balances.

11. Control Over Holding Companies

While the regulation of security issues has prevented further gross manipulation and has had a very salutary influence, the broader and more fundamental objects have been obtained only to a limited extent. It is true that the sheer watering of stock has become all but an impossibility, and the manipulation of operating costs, with the object of raising or depressing the market prices of the securities, is no longer a common every day occurrence. Nevertheless regulation has not been as thoroughgoing as it ought to be. A serious defect is that the commissions for the most part have direct jurisdiction only over the operating companies, with little or no control of holding companies. But the latter have been used to a large extent as the financial agencies of the properties, and evaded real control of security issues. And in special cases they have been employed also for the continuance of financial manipulation, to create the desired changes in security prices. The financial control by the commissions should be extended over the holding companies to protect the public interest in the same manner as over operating corporations.

12. Revision of Past Security Issues

Another difficulty has been that with the establishment of regulation nothing was done with the previously outstanding security issues to bring them into proper relation with reasonable investment or the valuation upon which the earnings would be supported under the system of rate regulation. Consequently, future limitation of additional issues could serve only inadequately to establish thorough financial stability in the business or to protect the investors in the earning power through the rates authorized by the commissions.

Unfortunately overcapitalization had been widely prevalent. It existed practically in every large property which had been brought together through successive consolidation of previously existing smaller properties. In such cases there were large varieties of different grades of bonds and stock in the hands of investors. The total of such securities far exceeded the reasonable investment or valuation for rate purposes, and under strict rate regulation could not possibly be supported by the earning power authorized by the commissions.

The result in all such cases was necessarily that the new securities, authorized and sold under commission control and based upon definite additional investment, were nevertheless affected as investments by the previously existing overcapitalization. This has been one of the outstanding difficulties in rate regulation during the past fifteen years, and will continue to hamper progress until it is frankly met by the establishment of a clear public policy to meet the situation.

The point here emphasized is that the regulation of security issues for financial stability of the enterprise should be linked with the policy of rate regulation. The two things go together. The control of new securities is rather futile without prior adjustment of the existing securities to the authorized earning value of the properties, or the rate base. Moreover, comprehensive control of securities would serve as the most satisfactory means by which the basis of rate regulation could be definitely established and constantly maintained. This matter will be further discussed in Chapter XII.

13. Proper Accounting a Minor Purpose

Another purpose of regulation set forth in most of the statutes is that of proper accounting. This, however, cannot be regarded as a primary purpose of regulation; it is only a means, or machinery, by which the prime purposes can be carried out.

The point of view maintained throughout this work is that most of the facts required for satisfactory and effective regulation must be shown by the accounts. These should be constructed so as to show the actual results of operation. If they are honestly and scientifically kept, they furnish the means by which control can be based upon readily available facts, so that guess work can be practically eliminated from regulation.

An important criticism of the accounting control is that it has been too often treated as a thing for itself, and has not been definitely coupled with rate making and the other purposes of regulation. The statutes almost throughout give the commissions power to prescribe uniform systems of accounts for the various classes of corporations under their jurisdiction. The accounting systems, when formally adopted, have the force of law and are binding upon the corporations. For the most part, the provisions have been excellent and represent perhaps the best work accomplished or approved by the commissions. The difficulty, however, is that they have not been sufficiently integrated with the primary purposes of regulation, and the commissions have not had adequate power, or have not exercised it, to compel the companies to follow the requirements of the accounting systems.

14. Classification of Accounts

It is not necessary to describe in detail the accounting systems prescribed by the commissions. It is desirable, however, to present in broad outline the underlying principles. This will assist materially in realizing the importance of the accounts as requisite machinery in rate making and all other purposes of regulation.

The classifications are based almost invariably upon double entry bookkeeping. They contain detailed provisions for the two classes of accounts basic in double entry: (1) Balance sheet accounts, and (2) operating accounts. The first group is designed to record the investment of a corporation and to make the facts available at a desired point of time, while the second group shows the changes during a period of time, a month or a year, due to the processes of operation. At the close of any period, the operating accounts are closed into the balance sheet accounts to show the complete financial standing of the corporation on the given date.

15. Balance Sheet Accounts

In the balance sheet accounts there are two general classes: (1) Property, or asset accounts, and (2) liability accounts, showing the sources from which the funds were derived for the acquisition of assets or property. The asset accounts are intended to represent the money cost of the various items of property, so that, when a balance is taken, they will show the total cost of the property in service at that point of time.

Each property account is charged or debited with the cost of the particular plant or equipment acquired or installed, and is credited with the cost of all such property, sold, retired or abandoned. The balance of each account at any time shows the original cost of the particular plant or equipment then in use. And the sum of the balances of all the asset accounts shows the cost of all the properties or assets owned by the company in connection with the public service.

The classification of property accounts usually follows the so-called "functional" lines, i.e. according to the function, or the kind, or special service rendered by the particular property. The purpose is to show the capital investment not only for the entire service, but the amount for each important separable part. Ultimately the object is to show the cost of service, and thus the property is grouped in the accounts according to the divisible steps in the service. This permits the corresponding functional grouping of the cost of operation, especially the cost of repairs, depreciation and return on investment.

The second group of balance sheet accounts include: (1) The different classes of liabilities or loans through which funds were obtained; (2) the investment made by the stockholders; (3) the accumulation of special reserves; and (4) the reinvestment of surplus accumulated out of earnings. All these accounts are intended to show actual sums of money from the different sources. They are not to show guesses or hypothetical sums but actual cash funds, or their equivalents in recognized value, derived from the several sources for the properties used in operation.

The two groups of balance sheet accounts are intended to furnish a complete record of the investment. The total cost of the properties as shown in the assets, is, of course, equal to the total of the funds derived from the several sources as shown by the liability accounts. [3] Here is the basis of double entry accounting. The same sums are recorded from two standpoints: (1) The object of the investment and (2) the source of the investment. Consequently the sum of one set is equal to the sum of the other. Each group is subdivided according to the requirements of the business, so as to furnish the information both as to assets and liabilities in the most useful form. While the classifications have been prescribed partly for the purposes of management, they serve also to furnish the requisite facts for regulation.

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[3] The term "liability accounts" is not well suited to convey the broad concept for which it is employed. Its ordinary meaning is "debt" of a person or business. But in its broad accounting sense it includes all other sources, owners' or partners' investment, capital stock, premiums on securities issued, reserves and surplus. A better term might be devised, but it is used here because it is employed more widely than any other for the particular concept in accounting.

16. Revision of Balance Sheet Accounts

The principles underlying the balance sheet classifications are scientific and excellent. The accounts, if kept as intended, would show all the necessary information for rate making. They would show definitely the amount of money invested in every utility on which the investors should receive a return. But in practice the very excellent accounts do not show the information which they were intended to convey. While they were expected to show the cost of the properties, in reality, with perhaps important exceptions, they do not carry out this purpose.

The basic difficulty is that with the beginning of regulation no adjustments were made in the property accounts. It is notorious that prior to regulation the charges to the accounts had no relation to the actual costs, or actual investments, made by the corporations. The overcapitalization discussed in earlier sections simply had its counterpart in the charges to the property accounts. The contents of the latter, therefore, are as unreliable a measure of the actual cost of the properties used for the public service as the securities outstanding.

Since the adoption of regulation the balance sheet accounts have been in large measure satisfactorily kept. Additional investments made since then have been for the most part accurately recorded. Moreover, in many classifications, balance sheet accounts have been definitely segregated so as to show separately the property accounts prior and those subsequent to the introduction of regulation.

This segregation is desirable, but the difficulty is that in most cases the bulk of the properties were installed prior to regulation. The result is that the total book costs of the properties are no more usable for rate making than are the security issues outstanding in the hands of the public. The two in the double entry system are merely equalized sums upon opposite sides of the balance sheet; but the amounts have no significance for rate regulation. There should have been a determination at the time regulation was instituted. Where the actual costs of the different classes of properties could not be ascertained from the accounts and records of the corporation, an appraisal should have been made with such adjustments as would be equitable in each particular case. The amounts should have been somehow definitely fixed, the property accounts rewritten accordingly, and the entire balance sheet correspondingly readjusted. This would have presented the best available figures for the actual cost of the properties, and the exact accounting procedure for subsequent investment would have provided an accurate and constant basis for rate regulation.

17. Operating Accounts. Revenues

The operating accounts have worked much better in practice than the balance sheet accounts. They have furnished in a reasonably satisfactory manner the actual facts of operation, which are required for the purpose of rate regulation.

Operating accounts show the result of operation for a period of time, which for our discussion will be assumed throughout to be a year. They show, in general, the monies or earnings accrued from operation together with the costs or charges incurred during the period. At the end of the period, the net results are incorporated with the balance sheet accounts to show the financial standing of the corporation as compared with the beginning of the period. They show by periods the return from operation.

As already suggested, the operating accounts are subdivided into two general groups: (1) Those showing the revenues or earnings from operation, and (2) those showing the operating expenses and other charges connected with operation. The difference between the two at the close of the period shows the net results; whether there has been a net income or a loss. This is then joined with the balance sheet accounts, showing either a net increase in assets and addition to surplus, or a net decrease in assets and diminution in surplus.

The revenue or gross earnings accounts are simple. They consist of the different sources of gross income from services rendered; the classification follows the grouping of the service provided by the corporation. If there is a recognition of different classes of consumers, the revenue classification is based upon this differentiation. Likewise the accounts show separately miscellaneous revenues, depending upon the major purpose of the utility, but, nevertheless, separate from such main purpose. For example, the principal function of a street railway is transportation of passengers, and the revenue from this source is plainly segregated. But incident to its operation there may be other transportation, the sale of electric power, advertising, etc. These various sources of revenue are kept distinct, but are finally combined to show the total revenue from operation. The reason for including the incidental revenues is that the properties used for the general services are employed also for the minor purposes.

Three Classes of Deductions from Revenues

18. OPERATING EXPENSES

The operating expenses and other deductions are also fairly well shown. There must be a clear distinction made between the basic charges. There are (1) Operating expenses proper; (2) taxes or other governmental levies; and (3) payments which represent the distribution of returns to lessors, creditors, bondholders and stockholders.

The operating expenses as such represent the cost of labor, materials, and facilities consumed in operation. This includes the repairs and maintenance of the properties required for operation. Moreover, the cost of maintenance contains not only the actual labor and materials used in repairs and minor renewals of property, but the wear and tear and other depreciation incident to operation.

All the items of labor and materials represent definite costs and involve no uncertainty. The wear of property or the depreciation charge, however, must be based upon estimates and consequently does not represent a clearly established fact as to cost. This, however, under proper control, can be satisfactorily regulated and offers no serious difficulty, as will be shown in more detail in Chapter VII. There is a further uncertainty in the costs charged to maintenance. While the payments in these are definite, there is a margin of uncertainty, whether a particular expenditure should go to the property accounts as an addition or renewal, or whether it represents a repair and belongs to operating expenses.

This margin, however, is relatively unimportant, and under proper regulation would have little significance. It would be ultimately immaterial whether a particular minor charge is carried to the property account as an addition or renewal or to operating expenses, so long as in both categories actual cost is clearly recognized as the basis of rate making.

19. Taxes

The second group of current charges represents taxes and other payments made by the corporation to federal, state and municipal governments. For the most part these items are definite beyond dispute. In recognized rate practice, the company is entitled to reimbursement from the consumers for all such charges on properties used in operation.

There is a margin of uncertainty in taxes on properties only casually employed in the public service but principally used for other purposes. This, however, has never been a serious matter in rate regulation. Such taxes are easily apportioned on some equitable basis between operating and non-operating charges. There is, however, one general tax about which there is dispute, but apparently a final determination has been made. This is the federal income tax. The underlying purpose of this tax is presumably to place the burden upon the persons who are assessed by the government. In ordinary taxes, the corporation transfers the tax burden upon the consumers. The company is used merely as a vehicle for the tax collection, and the taxes are included outright in the operating costs paid by the consumers. In the case of the federal income tax, however, presumably there has not been the purpose of shifting the tax to the consumers, but rather to put the burden upon the personal tax payers. To the extent that this is true, it would seem that the income tax paid by the corporations ought not to be included in the charges in rates and transferred to the public, but should be borne finally by the corporation itself.[4]

20. DISTRIBUTION OF RETURNS

The third group of charges consists of the distribution of net earnings to the different investors in the properties used for the public service. This is true whether the charges are interest, rentals or dividend payments. In the case of interest the payments are distributed to the investors who have loaned funds for the purchase of the properties. In the case of rentals the payments represent distribution of return to the owners of property leased to the particular corporation for the public purpose. Finally, in the case of dividend payments to stockholders there is a distribution of returns to those usually recognized as the owners of properties.

It is well to make clear here that the usual rigid distinctions in corporation finance between creditors, lessors, and owners have been practically eliminated from consideration in the case of public utilities. The various classes of bondholders have come to be regarded as investors in the properties side by side with the stockholders. All have an equity in the properties, on which they are entitled to a return. They represent merely relative priority of claims. There is a gradation from the underlying or first mortgage bonds entitled to the very first net returns of the companies, to the second and various junior mortgage bonds, debentures and income bonds, first and second preferred stock and common stock outstanding. All are investments in the properties and have become generally recognized as such in law. The stockholders as owners exercise more direct control in the operation of the properties, but as investors in their relation to the public they are no different in principle from the other security owners or creditors of the corporation.[5]

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[4] "But the fact that it is the federal corporate income tax for which deduction is made, must be taken into consideration in determining what rate of return shall be deemed fair. For under §216 the stockholder does not include in the income on which the normal federal tax is payable dividends received from the corporation. This tax exemption is, therefore, in effect, part of the return on the investment." (Galveston Elec. v. Galveston, 258 U. S. 388, 399.)

And, again:

"It must be borne in mind, as pointed out in Galveston Electric Co. v. Galveston, supra, that, since dividends from the corporation are not included in the income on which the normal federal tax is payable by stockholders, the tax exemption is, in effect, an additional return on the investment." (Georgia Ry. v. R. R. Coms., 262 U. S. 625, 633.)

21. Third Group Needs Clarification

The three groups of charges, as will appear in the next chapter, should show the costs upon which rates are based. The first two groups do furnish the facts for this purpose. But the third group of charges in the form of rent, interest and dividends, really representing a distribution of the returns to the various investors, is the only element which cannot be used for rate making purposes. While the charges represent definite payments, they are not based upon actual investment, or other valuation, entitled to a return, but upon obligations assumed by the company, mostly in the shape of outstanding securities, which in most instances bear no close relation to the rate base.

It is precisely here where regulation has hitherto failed. We know and account for the exact cost of labor and materials used in operation. We know and account for the various governmental charges that ultimately must be paid by the consumers in the rates charged by the utility. We do not know and do not account for the return required upon the capital actually employed in the utility enterprises. This third group of charges presents the major problem in rate making. It is to the discussion and solution of this problem of cost that most of the succeeding chapters will be devoted.

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[5] As to rentals, they are of comparatively minor importance. Where, however, leased property is used in operation, its right to a return is unquestioned in rate cases. But the return allowed is based upon the investment or "fair value" of the properties, and not upon the amount of the rental unless this should coincide with the proper return.

CHAPTER III

THE FUNDAMENTALS OF RATE REGULATION

1. Reasonable rates main purpose. 2. Inadequate legislation. 3. Cost of service. 4. Operating expenses. 5. Governmental charges. 6. Return upon capital employed. 7. Cost basis of return not definitely established. 8. Uncertain element renders regulation ineffective.

1. Reasonable Rates Main Purpose

The principal purpose of regulation has been to secure reasonable rates. Discriminating or excessive charges were originally the prime cause of popular discontent which brought about active regulation, and to this day continue to be by far the most contested subject before the commissions and the courts. It is true that service regulation is of great importance and has to be considered in conjunction with rates. The problems and difficulties, however, have centered so much around rate making that our discussion will be concerned chiefly with this subject. The purpose will be to show the difficulties of rate regulation under existing methods, and to point out how the whole process may be made definite and practically automatic.

2. Inadequate Legislation

The chief difficulty in rate control appears in the statutes which provide for regulation. With very few exceptions, they merely give the commissions power to fix reasonable rates, without, however, defining the principles, policies, methods and machinery by which such reasonable rates shall be fixed and maintained.

As an illustration we may refer to the present Interstate Commerce Act providing for the regulation of railroads. This act gives the Interstate Commerce Commission power to fix rates. It further prohibits discriminatory rates as between communities, classes of commodities and individuals. The act also gives the commission full power to prescribe uniform accounting, and in another part provides for valuation of the railroad properties.

But these provisions, which could and should be combined into a definite rate making system, remain unrelated and fragmentary. They require reasonable rates, but do not define what actually constitutes a reasonable rate, nor prescribe how it is to be determined.

The Transportation Act of 1920 requires of the Interstate Commerce Commission to fix rates that will allow "a fair return upon the aggregate value of the railway property," but it does not define value. The commission is directed to give "due consideration to all the elements of value recognized by the law of the land for rate making purposes," and further to give "only that consideration which under such law it is entitled to in establishing values for rate making purposes." In addition to these vague directions, the act provides that when the value of the railroad properties is determined under the provisions of the Valuation Act of 1913, "the value so ascertained shall be deemed by the Commission to be the value . . ." But the Valuation Act itself merely provides for the ascertainment of various "elements of value" besides a jumble of other data; it does not define any particular element as the value of a railroad for rate making purposes.[1]

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[1] For two years following March 1, 1920, the act calls for a total return to all railroads of 5½ per cent of the aggregate value of the

The same difficulty appears in practically all the state public utility acts. It is excellently illustrated by the New York statute. Section 49 of the Public Service Commissions Law of the State of New York gives the commission power to fix reasonable rates for street railways and common carriers within the state. Then it declares that in fixing reasonable rates, the commission shall have "due regard among other things to a reasonable average return upon the value of the property actually used in the public service and to the necessity of making reservation out of income for surplus and contingencies."

In section 72 providing similarly for the regulation of gas and electric rates, the same general grant of power appears, except that in place of "the value of the property actually used in the public service" we find the phrase "capital actually expended."

It is evident that the New York statute does not define the responsibilities of the commission in the determination of rates. The language is far too general and vague to serve as a satisfactory guide for a body whose powers are limited by the terms of the law. It furnishes no specific basis for action.

The provisions of the Interstate Commerce Act and of the Public Service Commissions Law in the State of New York are typical of the situation throughout the country. The commissions' powers and duties have not been defined and prescribed. The primary difficulty, therefore, has been the lack of definite legisla-

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properties. Thereafter the rate of return is to be determined by the commission.

The Interstate Commerce Act as now constituted undoubtedly tends in the direction mapped out in this book. There are, however, two serious defects. In the first place, value is left undefined; and in addition the aggregate value is taken as base, leaving the rights of the individual companies and their investors as undetermined as before. Thus scientific rate regulation of common carriers depends as much upon further direct legislative action as does rate regulation of other utilities.

tion, and the remedy lies directly with congress and the legislatures.

3. Cost of Service

But in spite of the loose provisions of the statutes, actual rate regulation in practice has worked out, to a large extent, fairly definite principles and methods. While these practices do not have the explicit sanction of the laws, they have become generally established through the work of the commissions for many years and have practically acquired the force of law. They have scarcely been questioned, and, therefore, stand today as the established principles of rate regulation.

In general, with the very important exception which is the basic problem discussed in this work, the principle established is that reasonable rates are based upon the cost of service. While the statutes have provided only for reasonable rates, the question faced by the commission was: What is fair or reasonable both to the public and to the investors? The answer mostly has been that the company should be reimbursed for the cost incurred in the service of the public, but that the public should not pay more than the fair cost. Thus through the force of actual experience and the inevitable necessity of fixing rates, the commissions have come, in a large measure, to the recognition of the fact that cost of service must be the basis of rates. But unfortunately this practice has not been definitely established and adhered to in all the elements which enter into rate making.

As a matter of fundamental approach, we have the feeling that cost throughout is the proper basis of rates. We naturally look upon the utilities as a means of providing common necessities, and as a form of general cooperation. The companies are, in substance if not in strict legal terms, social agencies to furnish essential public services. The proper basis of their compensation, therefore, is the cost incurred for the public.

The cost of service, as noted in connection with the discussion of accounting in the preceding chapter, consists of three clearly separable factors or categories: (1) Operating expenses, (2) taxes and other governmental charges, and (3) the use of funds contributed by investors; i. e. the interest, dividends, or other return required by those who furnished capital for the public service.

4. Operating Expenses

The operating expenses, as previously explained, consist of the cost of labor and materials consumed in the course of operation during a period of time. For the most part, the contents of operating expenses are clear enough and can be taken satisfactorily from the accounts for rate making purposes. In the matter of full maintenance of the properties, however, there have been two items which require a clearer determination before the costs can be satisfactorily taken from the accounts without dispute. One of these relates to repairs and renewals about which there may be uncertainty as to whether their cost should be charged to operating expenses or to the property accounts as fixed capital additions. If an expenditure represents an improvement for the benefit of future operation, it should be charged to the property accounts. If, on the other hand, it is merely a repair or minor renewal of parts of property consumed in the operation of a given period, it should be charged to current operation.

For the most part there is no difficulty in determining whether a particular cost is a proper capital charge or an operating expense. Where, however, there is uncertainty, conservative financial management should make the charge to operating expenses. But this conservative practice should be so safeguarded by the accounting and rate making methods that any improvements in the properties resulting through such charges to operating expenses, may not subsequently emerge as a capital item on which a return is allowed. In other words, if the consumers are required to pay for minor items of improvements through operating expenses, they should, through adequate accounting control, be protected from paying subsequently a return upon the very improvements which they paid for. In case, however, charges are made to property accounts which in reality should have gone to operating expenses, the cost of service is understated, the rates may be temporarily somewhat less than they ought to be, and subsequently would have to be raised in like manner. The return on the investment, however, should remain unaltered. Under proper accounting control it would not be affected either by a temporary overcharge or an undercharge to operating expenses covered by rates. Unfortunately this matter is not adequately provided for and is a source of dispute in rate regulation.

The second item in operating expenses requiring clarification, is the charge for depreciation. This charge, as indicated in the previous chapter, does not represent an actual outlay of a definite sum at the time it is entered in the accounts; it is an estimated amount of the cost of property used up in current operation, which will ultimately have to be replaced. In other words, it is an allocation to the operating expenses of a given period for the expired usefulness of property in operation during that period.

While the principle is that the original cost of any plant or equipment shall be apportioned to operating expenses during its life, the length of life can be only estimated but not exactly determined. For practical purposes, however, under continuous accounting control, this would present no grave problem. The average life of each class of property can be estimated without a wide margin of error. Even if some original estimates prove to be wrong, the operating officials will note the error in due time, and make adjustments accordingly.

But, unfortunately, the commissions have not had sufficient power to deal properly with depreciation, and the accounting control is inadequate. The companies can practically make such charges as they wish, without regard to the facts. In fixing rates, a commission can determine the proper allowance, but it cannot compel the company to include the amount in its operating expenses. The whole matter of depreciation is in a state of confusion and requires clarification.[2]

Besides the items of maintenance and depreciation, however, we must consider also that the expenses have to be reasonable and actually incurred in behalf of the public service. If there has been extravagance or mismanagement, the excessive costs cannot be charged to the consumers, but rest upon the companies responsible for efficient operation. Moreover, there may be expenses incurred which have nothing to do with the public service and should not be included in cost.

Sometimes the dividing line between proper and unjustified charges is difficult to determine. For the most part, however, the expenses are properly reflected in the accounts and there is no question of their inclusion for rate making. But analysis is necessary; there should be no blind acceptance of operating expenses as shown in the accounts. With adequate commission supervision, however, very few improper charges would occur, and reasonably efficient operation would be obtained. With systematic commission audits and control over operation, the expenses taken from the accounts would control for rate making.[3]

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[2] For detailed discussion of depreciation, see Chapter VII.

5. Governmental Charges

The second group of operating costs are taxes and other governmental charges. As stated in the sections under accounting, the principle has become definitely recognized in rate practice to include all such items in the costs to be reimbursed by the consumers. This involves the recognition that the corporation is used by the government merely as a vehicle for the collection of these charges, and that it is not intended to bear the burden itself. The consumers ultimately pay the taxes through the rates paid for service.

There is, however, an exception to this general principle. As already set forth, the federal income tax involves the question whether this burden should rest upon the investors or be shifted to the public. The first view seems to have the approval of the Supreme Court of the United States, but the question apparently has not been definitely settled and is one of the minor uncertainties in regulation. In all other taxes, however, the principle is clear that the amount actually paid should be reimbursed to the company by the public through the medium of rates.

6. Return Upon Capital Employed

The third element in the cost of service is the "very important exception" to the generally accepted cost basis referred to above. This is the cost incurred in connection with procuring funds required for the properties used in the public service. It is the necessary interest, dividends or other return required by investors for furnishing capital employed for the public.

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[3] In rate cases, it is exceedingly difficult to prove extravagant and inefficient management or improper charges to operating expenses. Hence, when costs have been incurred and included in expenses, they are likely to be recognized in the rates. For this reason it is particularly desirable to exercise constant supervision of operation and the accounts.

The principle of cost in this factor has never been definitely recognized, and the costs themselves in a large proportion of cases are not satisfactorily shown by the accounts. To place regulation upon a sound and workable basis, both of these uncertainties must be resolved. Here is the crucial problem in rate regulation.

As to principle, there has been only the statement that the investors are entitled to a "fair return on the fair value" of the property. What constitutes fair return or fair value has never been defined. Neither return nor value has been definitely based upon cost, or upon any other clear element or combination of elements. The whole matter is in a state of vagueness and confusion. It has been endlessly analyzed, discussed and litigated, but without clarification of the issues. It has consumed the major time and efforts of the commissions, but remains unclear and confusing as ever. This is the problem of effective regulation.

7. Cost Basis of Return Not Definitely Established

While with the introduction of rate regulation no definite principles and methods were provided, it should be stated that the public authorities vaguely expected to develop an exact procedure with respect to the return on the properties, just as they worked out fairly satisfactorily the other elements in rate making. The commissions, for the most part, tended to the cost principle throughout, applying it to the return as well as to operating expenses and taxes. While they never laid down a definite policy, they proceeded mostly to base the return upon actual investment. Where the facts were not available from the accounts, the commission made appraisals based principally on the actual costs of the properties, less deduction for depreciation. Somewhat vaguely they assumed that over a period of years practically all of the properties would be appraised and gradually a definite rate base would be established.

Unfortunately these tacit assumptions were never transformed into law or into recognized policy followed systematically by the commissions and the courts. In the case of operating expenses and taxes, the cost principle was thus easily established in practice. But as to the return on investment the cost view was never solidified because of the greater diversity between public and private interest, and especially because of the tremendous upheaval in prices during and after the war. There is less definiteness now than was assumed to exist fifteen years ago.

Even in the case of the railroads where appraisals for all of the properties were deliberately ordered by the addition of Sec. 19a to the Interstate Commerce Act in 1913, no specific principle or policy was laid down. The statute merely ordered the commission to "make an inventory which shall list the property of every common carrier" and to "ascertain and report in detail as to each piece of property owned or used by said common carrier for its purposes as a common carrier, the original cost to date, the cost of reproduction new, the cost of reproduction less depreciation. . . . The Commission shall in like manner ascertain and report separately other values, and elements of value, if any, of the property of such common carrier."

As to the significance of the elements of value mentioned in the statute just cited, a good deal will be said later. It is sufficiently clear at this point, however, that the statute is no more definite with respect to either fair value or fair return than the utility statutes enacted by the various state legislatures.

8. Uncertain Element Renders Regulation Ineffective

We have had two decades of haphazard rate regulation, but with very meager results. In essential respects, the principles as well as the facts are as uncertain now as they were in 1900. During and immediately after the war, when costs of operation were rising, it was difficult to raise rates as they should have been, because of litigation as to valuation and the fair basis of return. With the decline in operating costs for the last three years rates have not been reduced as they properly should have been because of the same endless controversy.

All along, prior to, during and after the war, rates were adjusted, on the railroads and municipal utilities, upward or downward, not on scientific bases in accordance with definite policies and well determined facts, but as the companies or the public succeeded laboriously and with great expense in making the clamors for rate changes heard by the authorities. Only extreme cases of over or under charges were really ever initially attacked by regulatory bodies, because the entire rate making machinery has been too clumsy and unwieldy. Those cases that were taken up were extended over unconscionably long periods of time and the decisions brought extremely tardy or only partial and haphazard justice to the public or the investors.

Rate regulation, and all other regulation intimately bound up with it, becomes too expensive and utterly unworkable under such conditions. If regulation is to be effective, there must be first a definite principle upon which it shall be based. Then there must be a clear determination of the facts in accordance with the principle. Finally there must be a permanent machinery established to make the facts available at all time. Then the commissions would know constantly what should be done, and would be able to adjust rates without litigation or drawn-out hearings.

What steps should be taken to clear up the deadlock we have reached in the field of regulation, especially as to rates, will be outlined in subsequent chapters.

CHAPTER IV

VALUATION PRIMARILY A LEGISLATIVE RESPONSIBILITY

1. Rate regulation in a vicious circle. 2. All rate making legislative function. 3. Valuation not concern of judiciary. 4. Legislative function positive; judicial—restrictive. 5. Existing and future investments separately treated. 6. Problem centers around existing properties. 7. Certainty a prerequisite of rate control. 8. Appraisals practical; cost justified. 9. Railroad valuation—case in point. 10. Proposal recognized. 11. Legislatures free to adopt basis.

1. Rate Regulation in a Vicious Circle

To clarify regulation and to make it workable, requires the establishment of definite policies and methods by the legislatures. We come back to the basic question of the public interest in the special industries. The only way by which this interest can be conserved is by explicit definition, the establishment of clear cut policies and the provision of suitable methods and machinery to carry out the policies. These are primarily legislative matters and not judicial.

Heretofore we have moved, to a large extent, in a circle. While the general public interest has been recognized by the courts definitely enough to permit the establishment of explicit regulatory policies by the legislatures, the latter have contented themselves with only very general provisions, which have not been sufficiently clear for satisfactory administration. The legislatures, or more particularly the commissions, have felt themselves restrained by the courts, while the latter have refrained from encroaching upon legislative prerogatives.

The legislatures, to the extent that they have provided for regulation, have largely delegated their powers and duties to special commissions. This has been proper and the only workable way; but, the powers conveyed have not been adequate and the duties have not been clearly prescribed. As a consequence the commissions, on the one hand, have struggled with insufficient or piece-meal provisions, and on the other have stood in awe or constraint of the courts.

As previously stated, the principal obstacle to effective regulation has been encountered in the valuation of properties and in fixing the return on investments. As to these matters the commissions have never received sufficiently explicit legislative power and responsibility. They have not known definitely what the statutes intended or what the courts would sanction. The latter have held to the general pronouncement that a fair return on the fair value of the properties must be allowed. But this judicial concept was never precisely defined, and the commissions have therefore been uncertain just how to apply it in their practical work of rate making.

2. All Rate Making Legislative Function

The only way to meet this situation, particularly as to valuation and fixing the return on investment, is to formulate a detailed policy by direct legislation, with adequate machinery for its administration.

Rate regulation has been recognized as a purely legislative matter. This has been emphasized again and again in court decisions.[1] The general principle is clear that the fixing of rates is a legislative act beyond the control of the courts, except in so far as the rates may result in confiscation, or taking property without due process of law. But if rate making is a purely legislative function, it necessarily extends to the establishment of all the policies, principles, processes and machinery by which rates may be determined. Specifically, it demands from the legislatures, or the authorities with delegated powers, to determine what factors are to be included in rate making, how each factor shall be treated, as well as how the facts shall be determined for the purpose.

There is frequently a misunderstanding as to just where the function of the legislature ends and that of the court begins. The view prevails, often unconsciously, that valuation as a part or process of rate making is within the province of judicial decision. But as it is merely a step in the course of rate making, it cannot be differentiated from rate making itself. The step is an integral part of the whole; it is in essence therefore a legislative prerogative, just as rate making as a whole is legislative in character.

The legislatures, or the commissions with adequate powers delegated by the legislatures, should determine the basis of valuation and what rate of return is to be allowed. Proper rates manifestly cannot be fixed until these two factors are determined. To be sure, in the exercise of such power there is always the constitutional limitation that property must not be confiscated. Utterly unreasonable rates cannot be enforced and unjustifiable principles cannot be arbitrarily carried out. All these matters, as they pertain to the final rates fixed by the commissions, are subject to judicial review.

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[1] "Nevertheless the function of rate making is purely legislative in its character, and this is true whether it is exercised directly by the legislature itself or by some subordinate or administrative body, to whom the power of fixing rates in detail has been delegated. . . . There can be at this day no doubt, on the one hand, that the courts on constitutional grounds may exercise the power of refusing to enforce legislation, nor, on the other hand, that that power ought to be exercised only in the clearest cases." Knoxville v. Water Co., 212 U. S. 1, 8. And again recently in Newton v. Con. Gas, the Court stated: "Rate making is no function of the courts and should not be attempted either directly or indirectly." 258 U. S. 165, 177. See also San Diego Land & Town Co. v. National City, 174 U. S. 739, 754; San Diego Land & Town Co. v. Jasper, 189 U. S. 439, 441.

The entire process of rate making, however, including the determination of a rate base and a rate of return, devolves in the first instance upon the legislature or its delegated authority. Even when the rates are challenged by the corporation, and the court has to pass upon their constitutionality, it must confine itself to the problem of confiscation. In order to determine this point it may be compelled frequently to review the processes by which the regulatory body came to fix the given rates. But this is merely incidental. Unless the court concludes that the rates under consideration are confiscatory, it has no power to set aside an order of the commission merely because it may not agree with specific policies or methods, by which the rates were made under the legislative sanction.

3. Valuation Not Concern of Judiciary

In the vast amount of recent discussions regarding valuation and rate making, a great deal of criticism has been directed toward the courts, especially the Supreme Court of the United States. The view underlying most of the criticisms has been that while the commissions themselves were seriously struggling to make rate regulation workable, they were hindered by the famous decision in *Smyth v. Ames,* and by a long line of subsequent decisions.

It is true that if the Supreme Court had a more intimate knowledge of the facts, especially if it had more of a technical, economic, and financial background, the pronouncement in *Smyth v. Ames* would undoubtedly have been quite different, and the decisions or dicta in subsequent cases would have been more constructive and consistent. There is no effort here to defend the courts entirely against responsibility for the continued confusion in valuation and other steps in rate making. But the point is that in the first instance the responsibility rests upon the legislatures. The assertion of a public interest, its definition, and the working out of policies and methods by which this interest can be safeguarded, are immediately legislative in character. The courts were never charged with such responsibility. This lies *par excellence* in the legislative domain. Consequently, from a strict constitutional standpoint, if the courts proceeded to set up definite principles, policies or methods of regulation they would encroach upon the legislative authority.

As a practical matter, however, how could the courts, with their lack of equipment and limited experience in dealing with complicated economic questions, do otherwise than resort to general statements? Without clear legislative policies, what other standards could be reasonably expected from the courts but the broad assertion that the investors should receive a fair return on the fair value of the properties devoted to the public interest?

4. LEGISLATIVE FUNCTION POSITIVE; JUDICIAL—RESTRICTIVE

Whatever may be the proper allocation of responsibility between the legislative and judicial branches of government for the confusion in regulation, especially in valuation matters, the hope of cutting through the welter lies with the legislatures and not the courts. It requires broad constructive measures, with extensive consideration of technical problems and positive public purposes. For this we must look to the legislatures, which alone have the power to decide what shall be done or to determine policies for the public interest. The courts are concerned only with the question, when it arises, whether the legislative action has not unduly injured private rights or confiscated private property. This is restrictive, and not constructive. It may prevent the application but cannot enact positive measures for the promotion of the public interest.

There is no doubt that for effective rate regulation we must look for positive legislative action, which should include all phases of rate making, and particularly the principles of valuation and the determination of the rate base. But such sweeping action, involving immense private interests, with disputed rights and facts, may come under the domain of the courts to determine whether in individual cases there has been confiscation. For this purpose, naturally, the courts must employ some reasonable standard by which to measure confiscation. It is within this scope that they have dealt with valuation. It is from this standpoint that they evolved the measure of a "fair return on fair value." This, however, is not a positive act of rate making but a limit to such an act in order to conserve private rights against undue encroachment of public interest.

Such a limit on positive legislative action is basic under our constitutions. But the establishment of the limit does not provide positive standards and methods by which the public interest may be protected. For this we must look to the legislatures. The general right to regulate was recognized by the courts many years ago, but actual regulation did not come till affirmative action was taken by Congress and the legislatures of the states. Likewise now, the limits to rate making may be fixed by the courts, but that will not bring us definite and systematic rate making until we obtain the necessary direct action by the legislatures. The present chaos and deadlock will continue indefinitely if we rely upon judicial, instead of legislative, initiative.

But while we must rely upon the legislatures for the desired progress, the courts could and should assist materially by clarifying the limits of legislative action. The standard of a "fair return on fair value" is far from definite even as a measure of confiscation. It is as indeterminable for restrictive as it is for positive rate making purposes. It is not a fixed measure and can no more be satisfactorily applied, for the constitutional protection of private rights than for the enforcement of public interest. It is too vague and shifty as a judicial as well as a legislative instrument. It is far too unstable a balance for reasonable weighing of private and public rights.

Sooner or later the courts in determining the limits to public rights in relation to private interests, will be compelled to clarify "fair value" and fix a definite measure which is clear to the legislative and administrative bodies. In the meanwhile, we believe that the legislatures themselves are free to adopt definite standards for the positive purpose of rate making. Such a determination, if made with reasonable consideration, not only of public requirements but also of private rights, would be upheld by the courts in passing upon the individual cases of claimed confiscation. Such positive action would directly raise the issues and would furnish a more favorable setting for proper judicial ruling. In any event, the legislative policy would hasten the ultimate judicial clarification of the measure of confiscation.

We believe, however, that there would be little danger of conflict between legislative and judicial views. As will appear in the next chapter, the courts have apparently left the legislatures free to deal within broad limits of reason with the practical requirements of regulation, and they will not interfere with any action which the legislatures would be likely to take in introducing definite and systematic methods of rate making.

5. Existing and Future Investments Separately Treated

The necessity of legislative action applies to all phases of regulation, but it is here directed particularly to valuation and the determination of return on investment, which have been the great cause of confusion and deadlock. Our view is that the legislatures should formulate definite principles of valuation, and provide the requisite machinery and methods for continuous rate control.

In order to meet the difficulties in formulating definite principles of valuation, a distinction should be made between existing properties and future investments. As to the latter an exact determination of the rate base would be a simple matter. It would only be necessary to recognize clearly that the actual reasonable investment shall be taken as the basis of return. With this principle unmistakably established, all future investments could be clearly segregated from existing properties and the actual amounts invested for the benefit of the public could be shown in the accounts.

The treatment of future investment, so as to be under constant control of the commissions, will be considered in more detail in Chapter IX. For the present it is sufficient to state that the commissions would have to determine the desirability of all extensions, improvements, or any additional properties. During the course of construction or installation the commissions' engineers would have to supervise the work, to maintain proper standards and to prevent unreasonable costs. Under such supervision the actual costs of the properties should be taken upon the books and should constitute without question the rate base for the future. Automatically, they would be the amount on which the company would be entitled to earn a return. Both the rate base and the rate of return, could, as shown later, be administered without any doubt as to the facts, so that the entire process and administration of rate making would rest upon a definite and scientific basis. There would be no question as to the facts.

As to such future investments, there could be no possible complaint on the part of the investors that the rigid determination of the rate base would be unjust. The policy would be clearly established before the investments are made. If it were clear beforehand that the return on all future additional capital would be limited to the actual amount of money devoted to the public service, there could then be no reasonable objection to the limitation on the ground of justice after the investments have been made. The investors would know clearly what to expect and the consumers what return to pay on all new capital furnished. There would be practically a fixed contract between the public and the investors, with complete accounting provision to administer the terms of the contract. There could be no possible grounds for judicial interference with such definite arrangements for the future.

6. Problem Centers Around Existing Properties

The problem of establishing a definite and workable rate base under automatic accounting control appears entirely in connection with the investment in existing properties made prior to the determination of a clear policy of rate regulation.

As already explained, the facts as to existing properties are uncertain and the principles on which a rate base should be determined have never been satisfactorily formulated. These uncertainties have caused the tremendous confusion in rate making, which can be eliminated only if the uncertainties are cleared up.

In the first place specific principles of valuation must be adopted, and then the principles must be carried into effect in every case through actual appraisals of the properties and the establishment of a rate base which as to the past investment will remain unaltered for the future. This cannot be brought about without direct legislative action. It is a matter of affirmative policy, which cannot be established by the courts. It is necessary to determine by statute the principles of valuation and to direct the commissions to make appraisals of all existing properties in accordance with these principles so as to determine, once for all, in every case, the amount of past investment on which the public must pay a return.

Once these amounts are established, the records and accounts of each company should be rewritten so that the facts would appear according to the results of the appraisal. To this definite initial valuation of existing properties, should be added all additional future investments as they take place, so that for the future the total rate base would be ascertainable at any moment from the accounts. There would be no further doubt as to the facts; the cause for dispute and litigation would be removed. Rates could be raised or reduced, according to the change in total cost of operation. At every point the investors would know definitely what they are entitled to receive, and the public what it is obliged to pay. Rate making would become practically an automatic procedure based on facts under constant commission control, beyond the possibility of dispute between the public and the company. There would be scientific and definite rate making.

7. Certainty a Prerequisite of Rate Control

In fixing the initial rate base for existing properties, it must be admitted that there are very grave difficulties both in determining the proper principles of valuation and in applying the principles to the appraisals. Our belief is that for the most part, with certain adjustments, the actual reasonable investment should be adopted as the fundamental principle applied to the existing properties as well as to all future additions. But there are serious objections to the adoption of this standard for existing properties, and difficulties in its application. These problems will be treated in later chapters. Reasonable elasticity should be provided in the statute; it may be undesirable to prescribe rigid principles. The wide variations between different properties doubtless would require various special adjustments so that in any event only very general principles could be laid down to guide the appraisals. There would have to be sufficient flexibility to meet special conditions. But, whatever individual adjustments may be necessary or what variation in principles may appear desirable, definite appraisals should be made in each case to fix the initial rate base for existing properties. The valuation should then remain fixed for the future, to be increased only with actual additional investment.

Whatever adjustments may be necessary in fixing a definite sum, or what modification of principle may be desirable, our belief nevertheless is that at least the starting point should be the actual original cost of the existing properties employed in the public service. In most cases the original cost will be available for a large or considerable portion of the properties. In most of the states actual costs are available for most of the plant and equipment installed since active regulation was introduced. This appears, for example, in the case of New York, where the property or fixed capital accounts of all the utilities keep distinct the charges made prior to December 31, 1908, and those made subsequently; the time when the new uniform systems of accounts were introduced. Where there is such segregation, there would be no difficulty in establishing satisfactory figures for the cost of the properties installed since the accounting control went into effect. But for those installed prior to active accounting supervision, estimates would have to be made. Even for these, however, there are in many instances reliable cost records, going far back, sometimes even to the beginning of the properties. But, if the facts are not available, the only possible procedure is to prepare an inventory of all the plant and equipment, and then make the best possible estimate of the original cost. When finally the original cost, either actual or estimated, has been determined for all the existing properties, such adjustments may be made as may be reasonably required under the particular circumstances.

The chief point is that the uncertainty of past investment should be resolved, once for all. Certainty is the prerequisite of scientific and effective rate regulation. Whatever adjustments in the principles of valuation may be necessary or desirable, or whatever variations in practical application may be required, will depend upon the particular circumstances when a policy in any state is actually adopted and when appraisals are made. But whether actual investment with various adjustments, or some other basis or combination of bases be taken as fundamental, is a legislative matter, and would be determined in each case according to the special conditions or views controlling when a policy is adopted. Our chief purpose is not the acceptance of any one pre-conceived rule of valuation, but to demonstrate the fact, and make it clear beyond doubt, that the existing investments must be resolved into definite sums to make rate regulation workable. Unless this is done, rate making will be largely futile and grossly disappointing. The basis of valuation employed, whether actual investment, reproduction cost of the properties or a combination of factors, should be definitely determined by statute, or under statutory requirements. But whatever principle is adopted, a fixed valuation should be made of every property, and a definite rate base provided for the future.

8. Appraisals Practical; Cost Justified

One criticism of the course proposed will undoubtedly be advanced that the work involved would be so tremendous and costly as to make the plan unworkable. The answer is that it must be adopted if we actually desire regulation. The question is whether we are willing to pay immediately a relatively large amount to establish certainty and automatic rate control, or whether we wish to continue struggling indefinitely with disputed facts, conflicting principles and confusion which practically defeat the purposes of regulation. Undoubtedly there would be large immediate costs in making the appraisals, but there would be future certainty of facts, clear and simple principles, with low cost for continuous effective regulation. The costs would be amply justified as an extremely profitable social investment.

But it is easy to exaggerate the difficulties and expense of the proposed valuations. After all, active regulation has been in force for the better part of twenty years. To a large extent, as already indicated, the cost of the properties installed during this period can be readily ascertained. Frequently earlier cost records are available. Moreover, in many instances appraisals have been made in the past of which the data can be utilized. For the rest, however, physical appraisals would be necessary, but would not encounter any insurmountable obstacles or involve prohibitive costs. They would be based upon clear principles, proceed under definite and workable methods, with all possible short cuts consistent with due accuracy and equity.[2] If we really wish to establish certainty—the prerequisite to scientific regulation—we can readily do so. For the immediate future it would be a large and costly undertaking, but would be amply justified by the permanent results for future rate making.

9. Railroad Valuation—Case in Point

The critics will doubtless point to the valuation of the railroads as proof that the cost of establishing a definite rate base for every company would be prohibitive. The valuation act became law in 1913. The Interstate Commerce Commission and the roads have been at work on the project for ten years, have spent to date approximately $100,000,000, and yet the final figures for only a few comparatively minor properties have so far been reported. To complete the undertaking will probably require several more years and many more millions of dollars. The question is properly raised whether the enterprise is worth the tremendous outlay.

[2] For further discussion regarding practical methods and short cuts to be adopted in the appraisals of existing properties, see Chapter IX.

The answer, in the first place, depends upon one's point of view as to whether regulation is really desirable. But if we are to accept regulation as a relatively permanent future policy, we must have definite categories to deal with. Even the huge costs of the railroad valuations are justified, provided the results will be used in a systematic plan for future rate making. In the second place, however, neither in the original valuation act nor in the Transportation Act of 1920, was there a clear and specific provision how the facts were to be employed for rate making or determining the return to the investors. While there has been the presumption that such final use would be made of the valuations, the purposes were not adequately stated, nor were the principles and methods definitely prescribed.

The huge costs have been due in large measure to the initial undefined purposes and the diffused requirements of the statute. There have been, of course, also delays due to the war and the great increases in the level of costs. But, apart from the effects of the war, the commission, because of the diffusion in the law, has been required to accumulate vast amounts of data, exceedingly costly to obtain, which can serve little or no useful purpose. Moreover, the uncertainty of what and how the facts would be ultimately used, naturally led the companies to search for all possible facts and speculations which might be of benefit to them.

If the purpose of the valuation had originally been set forth as the determination of a permanent rate base for existing properties, and if definite principles and methods had been adopted, the work could have been finished long ago at a small portion of the actual costs and would have been directly useful for public purposes. The course pursued demonstrates excellently the unwisdom of vague measures without clear purpose. Our proposals involve no such undefined considerations and would call for no unnecessary accumulation of facts. It has the single objective of fixing a definite rate base, and would proceed upon definite principles and explicit methods. It would avoid the vast amount of floundering with uncertainties which has characterized the railroad appraisals. It would be directed to a specific end and would move by the straightest and simplest course to the destination.

10. Proposal Recognized

The proposal here outlined was practically incorporated in the amended public utility bill passed by the senate of the State of New York in 1922. This bill laid down the principle of actual investment and required the commissions to make appraisals of all existing properties. It provided also that subsequent additional investments be added to such initial valuations and that for the future the rate base be kept under permanent accounting control. The bill received extensive discussion in the legislature, but failed by only a few votes of enactment in the assembly.[3]

The plan, moreover, has been accepted as the foundation in a number of special agreements made by municipalities and public utility corporations. The idea is fundamental in the rapid transit contracts between the City of New York and the railroad corporations. Likewise it controls in all of the so-called "cost of service" franchises or contracts in various cities. In every one of these special agreements the existing properties were appraised, and to the initial valuation are added all future investments for the determination of the rate base. Wherever serious efforts have been made to cut through the confusion of rate regulation, the first step has been to make an appraisal of existing properties. When this was accomplished, rate making became a simple process, based upon facts as shown by the accounts.

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[3] Since the manuscript went to the printers, Governor Pinchot recommended similar legislation to the General Assembly of the Commonwealth of Pennsylvania, explaining in his transmittal message that a definite basis of regulation is necessary to cope with the increasingly complicated problems of public control. See Preface.

11. Legislatures Free to Adopt Basis

As already stated, our belief is that, with reasonable adjustments, the desirable principle of valuation for existing properties is the actual reasonable investment. This, however, must be considered in connection with the so-called reproduction cost basis which has been extensively supported in recent years by public utility corporations and has received consideration by commissions and courts. A special chapter will be devoted to this subject. We believe that so far as the courts are concerned the legislatures are practically free to adopt any reasonable basis of valuation which does not actually result in confiscation. Since, however, the principle adopted by the legislature does depend finally upon the confiscatory limitations set by the courts, it is desirable first to make a survey of court decisions, especially those of the Supreme Court of the United States. Such a survey is presented in the next chapter.

CHAPTER V

COURT DECISIONS ON VALUATION

1. Only U. S. Supreme Court decisions important. 2. Court hesitated to interfere. 3. Fair returns on fair value. 4. *Smyth v. Ames* statement. 5. Analysis of statement. 6. Depreciation factor omitted. 7. Actual vs. reproduction cost. 8. Reproduction cost insignificant except as check. 9. First Consolidated Gas case. 10. Change in price of commodity and in price level. 11. Language not to be technically construed. 12. Change in price level raises issue. 13. Galveston case. 14. Second Consolidated Gas case. 15. Southwestern Bell case. 16. Bluefield Water case. 17. Atlanta case. 18. Three cases harmonized. 19. Decisions and dicta. 20. Conclusion.

1. ONLY U. S. SUPREME COURT DECISIONS IMPORTANT

In analyzing the opinions expressed in the various rate cases that have come before the courts, many writers profess to see attempts to develop and adopt certain iron-clad theories of valuation. They believe that the attempts have been frustrated only because the courts lacked the requisite grounding in economic principles and methods. They assume that it is within the judicial function to formulate a principle of valuation as a guide to legislative action. Inasmuch as they fail to find a consistently guiding principle in the decisions, they indulge in sharp criticism of the courts. They regard the judiciary as the stumbling block to effective rate regulation.

An unprejudiced review of the decisions will indicate that apparently the courts have deliberately and consistently refrained from prescribing a definite principle of valuation that should control the legislatures. The purpose of this chapter is to show that no past decision precludes the legislatures, or the commissions under adequate legislative authority, from determining a policy and adopting a rate base which would meet the requirements of rate making.

We shall be concerned principally with the decisions of the Supreme Court of the United States. The decisions of lower courts have been so voluminous and inconsistent that their survey would scarcely be worth while for our purpose. In any event, the fundamental limitations placed upon the legislatures will appear from the final action of the Supreme Court; the decisions of the lower tribunals are either in conformity, or are temporary until a final determination is made by the highest court of the land. The questions involved are national in scope, with minor state or corporate variations. Hence the decisions of the Supreme Court are really the controlling factors.

Our view is that the legislatures are free to formulate a reasonable policy of valuation, applicable to existing as well as future investments, which will determine definitely the rate base for future regulation. The proposal is to establish a fixed rate base not subject to change with varying price levels and other shifting conditions. Moreover, we believe that the proper basis for existing properties is the actual reasonable investment, with some adjustments to meet the particular circumstances of the different companies. The question, therefore, is whether the Supreme Court has rendered decisions, or clearly formulated a fundamental principle which would prevent the legislatures from adopting a reasonable basis of valuation, particularly the actual investment basis, with such adjustments as will be considered later.

2. Court Hesitated to Interfere

The right to regulate rates was first definitely recognized in *Munn v. Illinois* in 1876. This case, however, involved only the general right to fix rates for industries endowed with a public interest. There was no question of adequacy of the particular rates. The only consideration was whether the legislature had the right to fix rates or prices of services or products furnished by a concern to the public. The decision and the reasons therefore were discussed in the first chapter.

After *Munn v. Illinois,* there was a long struggle by the Court in an attempt to develop rational limitations upon the legislative power of rate regulation. On the one hand, it was clear that the legislatures had the right to fix rates in the interest of the public where there was a dependence upon the industries. But it was equally clear that this right might be carried to such an unreasonable point as to deal unjustly with the investors and to destroy the investments. Somewhere, there had to be a limitation upon the power recognized in *Munn v. Illinois,* but just where the limit was to be placed and how it was to be determined, were difficult problems with which the Court grappled for many years; and is still grappling.

There was repeatedly and forcibly expressed in the opinions the hesitation to interfere with the legislatures in the establishment of policies for the public welfare. But, at the same time the rate restrictions, under public pressure, tended to go so far as to invade the reasonable rights of investors.[1]

The Court, therefore, in a long period merely declared invalid such particular rates as clearly and palpably were unreasonable to the investors in depriving them practically of any return on the investment.

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[1] Regan v. Farmer's Loan & Trust Co., 154 U. S. 362, 397; St. Louis & San Francisco Ry. Co. v. Gill, 156 U. S. 649, 663; Covington v. Sanford, 164 U. S. 578, 594.

3. Fair Return on Fair Value

In the celebrated case of *Smyth v. Ames,* in 1898, the Court finally stated a general principle by which the limitations upon the rate making power might be judged. It announced that reasonable rates from the standpoint of the investors must allow a fair return upon the fair value of the property. This pronouncement, however, was of such a broad and general character as to indicate that the Court still hesitated to interfere with the legislative power and was eager to avoid any arbitrary or unnecessary limitation. But manifestly in protecting the constitutional rights of investors there had to be a reasonable limit, and in judging the particular rate some general measure of reasonableness had to be established.

The Court was struggling with an exceedingly complicated financial and economic problem. All over the country for years, there was a feeling of grave public need for rate control, which had to be carried out through legislative action, but no one at the time had worked out a clear and definite public policy which could be readily administered and be just both to the public and to the investors. This problem was not one for the courts in the first instance. It was primarily a question for the legislatures, and came before the courts only in critical cases where the investors believed that their constitutional rights had been invaded. Naturally, the Supreme Court in such cases hesitated to interfere with legislative action; neither was it its duty or function to detail the methods by which just rates should be determined.

Moreover, the Court was not living in the atmosphere where these problems were in the making. It did not have the background or the equipment with which to work out such problems, which belonged primarily in the legislative domain. In other words, it faced the questions only incidentally from time to time as the extreme cases appeared, and under the circumstances it met the situation reasonably well. The pronouncement in *Smyth v. Ames* was probably as definite a proposition as could be made at the time, in order to avoid an encroachment upon legislative power.

4. Smyth v. Ames Statement

As noted, the principle pronounced in *Smyth v. Ames,* was very general. The opinion stated that in fixing reasonable rates a fair return must be allowed on the value of the property, and in determining such value consideration should be given to:

> ". . . the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the company under particular rates prescribed by statute, and the sum required to pay operating expenses . . . and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return on the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth."

It should be observed that this included a number of very general factors, not one of which was clearly defined. Moreover, in so far as individual factors may appear distinct, there was no determination by which the relative weight of the different elements could be fixed in any particular case. If the Court had intended really to lay down a definite rule as a guide for the legislatures or commissions in the determination of rates, it should have stated in what proportions the different factors are to be computed in establishing a definite rate base. But all these elements, which if used as bases may yield widely divergent results, are merely mentioned together with the suggestion that there may be even others which should be taken into consideration. What relative weight should be given to the original cost as compared with the present cost of construction, how much to the par value of the securities as compared with the market value, was not stated. The statement as a whole was equivalent to saying that common sense and reasonable business judgment should be used in estimating the "value."

It should be noted that some of the factors set forth have long since been recognized as not applicable at all to an appraisal. This is especially true of the par value of the securities. While it is given equal prominence with the other items, it has been given no weight whatever for many years in valuation, except in so far as it may agree more or less closely with actual investment or the appraisal of the physical properties. Attention has been centered on plant and equipment, while par value of securities has been disregarded. The market value of the securities has likewise been discarded as an element in valuation. The rate making bodies and the courts have long since recognized that the market value is immediately determined by the earning power under prevailing rates. If the prospective earning power is large, the value of the securities is high; if the earning power is meager, the value of the securities is low. This applies particularly to the capital stock which obtains all of the earnings above operating expenses and fixed charges. Consequently, the market value of securities has not been given any weight in valuation for rate making. The Court in all later decisions has hardly made reference to it, except casually in quoting the original statement from *Smyth v. Ames.*

Parallel with the market value of the securities is the concept of commercial ~~value~~. It is, of course, an economic commonplace ~~that in~~ ordinary business, value means exchange value, or commercial value, which is dependent upon the earning power of the properties. In any enterprise, free from rate regulation and limited only by the force of competition, the rates or prices for the product determine the earning power, which, in turn, determines the value of the business or the properties.

It became perfectly clear many years ago that it is not economic or exchange value of this sort that the Court had in mind in its pronouncement of fair value. Just as the market value of the securities was tacitly abandoned as a separate factor, so economic value was given up without comment. Moreover, it is highly improbable that the Court in *Smyth v. Ames* had formulated clearly the concept of exchange value in its relation to the problem of rate regulation. When the idea was clearly formulated and came up for consideration, the Court did take a definite position against it. For example, in the Minnesota rate cases in 1913, Justice Hughes stated that "the ~~value~~ of the use, as measured by return, cannot be made the criterion when the return itself is in question."

5. ANALYSIS OF STATEMENT

If the Court had intended to furnish an exact prescription of how fair value was to be compounded, it would not only have stated the relative quantity of each element in the compound and would have subsequently insisted upon the continual inclusion of all the elements, but it would have described the individual items so that each would be clearly distinguished from the others, and would not have included any irrelevant matter which could not possibly form part of the compound.

To show beyond doubt that the Court had in mind only a very general and rather indeterminate idea of fair value and not a specific formula, we may consider briefly the lack of precision in the use of terms and the obviously irrelevant matters. As to the latter, we find grouped coordinately with the other more material factors of fair value, two items which cannot conceivably be included with separate weight in the computation of a rate base. These items are (1) "the probable earning capacity of the company under the particular rates prescribed by statute" and (2) "the sum required to pay operating expenses." They are important categories in judging whether the rates are adequate to furnish a fair return on fair value, but manifestly do not enter into the determination of fair value itself. In fixing or in judging reasonable rates, earning capacity and operating expenses must be considered, and that is all that was meant by the Court. This is perfectly clear if the language is not strained and arbitrarily interpreted as an exact and specific rule.

Moreover, the terms which might be taken as factors in computing fair value are not used with such precision and exact relation to each other as would be required by a formula laid down for the guidance of the legislatures. The first two factors named are (1) "the original cost of construction" and (2) "the amount expended in permanent improvements." What is the distinction? Was there one intended? The two phrases were probably used more or less interchangeably, with a vague consciousness that they clarified and possibly supplemented each other, but without definite connotation or exact delimitation. This would be the rational explanation, which corresponds with everybody's daily experience in dealing even formally with semi-technical terminology.

But if the two terms are to be clearly differentiated and not allowed to overlap, then the first would probably signify the cost of the original properties constructed under the initial project, and the second would consist of the cost of all subsequent capital improvements after the original properties had been installed. This is a rational distinction, but it has no separate significance in the valuation, because it would still leave all the existing properties to be appraised at actual cost. The time of the installation would not be a material or fundamental separate consideration. The two would still constitute a single factor in computing fair value.

If, however, we persist in being technical and hold to the distinction, we are then constrained to follow it through the entire statement. Skipping the amount and market value of the bonds and stock, we have "the present as compared with the original cost of construction." If, then, we accept the limited sense of the "original cost of construction," which would not include improvements made subsequent to such original installation, then what meaning is to be attached to the "present" cost of construction, which is to be compared with the "original cost"? The most rational explanation would be that the present cost includes the original cost and the subsequent improvements. But, again, this would leave only the single actual cost basis for all the properties, and there would be only the one real element of value.

If, however, the present reproduction cost is meant, it is not clearly stated as would be properly required for a formula. Moreover, there would be the logical objection that the reproduction cost of all the properties would be compared with the original cost of only part of the properties. And if we limit the comparison to the same properties, then the reproduction cost would be applied only to the original properties and not to subsequent improvements.

This analysis, straining for an exactness which never existed, shows the futility of reading rigid requirements of a formula into the *Smyth v. Ames* statement. As a general guide it was reasonably clear and adequate for its purpose. It has permitted the Court to deal fairly with all the cases that have come up. It probably has confused some of the lower courts and undoubtedly it should be clarified even for judicial purposes. But it does not stand out as a fixed barrier to prevent desirable legislation for positive rate making in the future.

6. Depreciation Factor Omitted

For the sake of clearness, let us summarize the defects of the *Smyth v. Ames* statement as a formula for the computation of fair value. (1) It does not specify the relative weight to be attached to each of the so-called elements of value. (2) Some of the items have been tacitly discarded in subsequent cases. (3) Some were irrelevant and could not be rationally used in the computation of fair value. (4) The remaining factors were not presented with sufficient precision; they either duplicated, overlapped, or were elliptical or inconsistent.

With these criticisms of the assumed elements clearly in mind, we may turn next to the fact that one of the most important factors, which has come to be accepted as fundamental, was not mentioned at all in the so-called formula. We refer to the depreciation of the properties whose fair value is to be established. It may be argued that proper consideration of depreciation is implied in the concept of fair value, so that no separate reference was required. But the same view can be applied to any of the other elements, and it is the correct view. What the Court set forth was just "fair value," which automatically involved all the necessary elements, without a separate catalog of items and statement of proportions. The individual items were presented only as illustrative to indicate the course in determining the fair value. They were not intended as a complete and all-inclusive statement, or as specifically mandatory in respect to the designated items.

Possibly the Court had in mind the depreciation of the properties when it mentioned the "present as compared with the original cost of construction." The implied contrast may very well have been between the full original cost and the remaining sum after the deduction for depreciation. The term "present value" has frequently been employed to indicate the remainder after the deduction of depreciation in contradistinction to the full cost of the properties. But if this was the idea of the Court, it was not stated clearly enough for the purposes of a specific formula and would rule out the present conception of reproduction cost. The usual interpretation is that the phrase signifies the reproduction cost at prevailing prices compared with the actual original cost of all the properties used in operation. This is the distinction assumed throughout our discussion, but it is doubtful whether the Court had this in mind.

Although it was not specifically mentioned in *Smyth* *v. Ames,* depreciation became an inevitable factor in valuation. As a matter of common sense, old and deteriorated plant and equipment are not worth as much for any purpose as corresponding new facilities; and while the original cost might be the same, the net investment entitled to a return would be different. The issue whether depreciation should be deducted from cost new in computing fair value, first came before the Court in the Knoxville case.[2] The pronouncement was clear and explicit that a company is entitled to charge in the operating expenses an adequate amount for the depreciation of its properties. Likewise, all past depreciation is a proper deduction from cost new in determining the fair value, or rate base, on which a return must be allowed. This matter was more definitely disposed of than probably any other factor in rate making or valuation.

In the Kansas City Southern case[3] the subject of depreciation again came before the Court in connection with the validity of the accounting rules prescribed by the Interstate Commerce Commission for steam railroads. The Court held also in this connection that depreciation is a factor in the operation of any property. While the case did not involve rates, the discussion was comprehensive and squared with the views in the Knoxville case.

Since 1914 depreciation has not come before the Court again as a deciding issue. It was not only definitely disposed of earlier, but has been overshadowed by the more vital issue of actual versus reproduction cost as a basis of valuation. The companies have conducted a systematic campaign against the deduction of depreciation and have succeeded in impressing their views upon a few commissions and some of the lower courts. But they have not succeeded in getting even a further discussion from the Supreme Court and presumably the earlier decisions stand. In most of the recent cases, the valuation had been fixed after a deduction for depreciation, but the rates were either upheld or the matter of depreciation was not discussed.

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[2] City of Knoxville v. Knoxville Water Co., Jan. 4, 1909, 212 U. S. 1.

[3] Kansas City Southern Ry. Co. v. U. S., Dec. 1, 1913, 231 U. S. 423.

Depreciation will be treated more completely in Chapter VII as to its various bearings upon investment and cost of operation. It has been referred to at this point merely to emphasize the conclusion that the *Smyth v. Ames* pronouncement was not intended by the Court as a rule for the legislatures or the regulatory authorities. Some factors detailed in the statement have been abandoned by the Court without comment and others were not presented with adequate precision, while depreciation, since recognized by the Court as important, was not even mentioned. The conclusion is unavoidable that the Court did not intend to lay down a formula.

7. Actual vs. Reproduction Cost

Of the various factors set forth in the *Smyth* statement, only two have been argued into present contested bases of valuation: (1) Actual cost of the properties; and (2) reproduction cost. Although their relative importance has been the chief problem in valuation since the upheaval of prices during and after the war, they were not brought into clear contradistinction in the *Smyth* case. Their separate presentation is a matter of inference and not clear expression. The term "reproduction cost" was not used, but presumably was represented by the "present cost of construction."

Without straining for special meanings or quibbling about specific terms and their implied significance, the

Court probably attached no such specific distinction to "present cost of construction" (or reproduction cost) and "original cost" with which we now clothe the terms in viewing the great changes in price level. Whatever the Court may have had in mind, in all probability it was not considering the relation of shifting prices to the determination of fair value. While this has come to be the central issue in valuation, it has been created by the events in the last decade, but had little significance at the time of the *Smyth v. Ames* decision.

If we consider fairly the prior struggle of the Court with rate cases and conceive properly the setting of the *Smyth v. Ames* opinion, we must reasonably come to the conclusion that it probably had no special or precise point in mind in referring to actual cost and reproduction cost of the properties. It did not intend to express the exact economic distinction which has come to be the paramount issue in rate valuations. While this issue has come to the front properly enough, because it does involve now the question of fair value, it should be treated on its own merits and not distorted into a settled matter by imputing to *Smyth v. Ames* or to subsequent opinions meanings which did not exist.

So far as the Court had any distinct idea in the use of present cost it probably meant merely a check upon the reasonableness of the actual cost, or of the charges to the construction or property accounts. The *Ames* case involved railroad rates; and railroad construction accounting had been notoriously unreliable, while the actual costs themselves were often excessive because of extravagance, mismanagement or corruption. In the face of this general situation, the reproduction cost ascertained by appraisal would be a check upon the reasonableness of the actual cost. Valuation based upon reproduction cost helped to show where there had been excessive costs, and served to detect book charges which exceeded the reasonable actual costs of the properties. This was an issue in *Smyth v. Ames* and in other cases, and in all probability this was in the mind of the Court in the separate reference to present cost.[4]

8. Reproduction Cost Insignificant Except as Check

Except as a check upon the fair actual cost, there was no occasion for a clear differentiation of the reproduction cost. There was no issue as to the effect of general price changes upon fair value. It happens that the year 1898, when *Smyth v. Ames* was decided, was near the low point of a long period of gradually decreasing prices which started after the Civil War. The downward course is readily seen by reference to the price curve shown in the next chapter. Consequently, reproduction cost at the low point of prices could not be presented for the benefit of the investors. The only occasion for passing on rates is the threatened confiscation, but the reproduction cost at a point of minimum price level would not offer an opportunity for a challenge of the particular rates.

It is true that counsel supporting the rates in *Smyth v. Ames* argued that the reproduction cost basis would give to the public the benefit from the gradually falling prices. This point, however, was apparently only incidental in the support of the rates, and was given no consideration by the Court. At least the Court made no reference to it in the opinion, nor did it consider the idea anywhere in subsequent cases. In all probability it never thought of reproduction cost as a means of protection or conveying a special advantage to the public, corresponding to the support of the principle as a protection or an advantage at the present time to the investors.

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[4] Smyth v. Ames, 169 U. S. 466, 544; San Diego Land & Town Co. v. National City, 174 U. S. 739, 757; San Diego v. Jasper, 189 U. S. 439, 442; Stanislaus County v. San Joaquin, 192 U. S. 201, 214; Simpson v. Shepard, 230 U. S. 352, 454.

The Court could not have intended such distinction as we make now after twenty-five years of experience with rate making, and after the many technical discussions both from the standpoint of general economics and of special application to the problems of rate making. The reasonable view appears to be that except as a check upon the fair actual costs, the Court practically used present cost synonymously with actual cost, and the two terms interchangeably with "fair value." There was no reason for making an exact distinction; the purpose was only to point out the larger factors to be taken into account if confiscation is to be avoided.

Moreover, it must be remembered that the Court was not particularly experienced or trained to treat precisely with the economic significance of the terms. Actual cost and reproduction cost in relation to price level are financial and economic categories which in ordinary discussions even by carefully trained persons are not always kept clearly differentiated. Under ordinary circumstances they do not require clear distinction and now are often used interchangeably. Unless the difference were clearly expressed, the fair presumption is that it was not intended.

This interchangeability of reproduction cost, actual cost and value is current even now among financial writers, but it prevailed almost generally at the time of and prior to *Smyth v. Ames.* For the most part only since then have the distinctions been clearly recognized. A definite understanding of price level as affecting reproduction cost compared with actual cost, has become common even among economists and financial writers only in comparatively recent years. Prior to 1900 the terms "cost" and "value," especially normal cost and normal value, were often used practically interchangeably. The prevalent doctrine was that the value of a product or unit of property is equal to its normal cost; that competition brings the market value of a commodity to practical equivalence to the normal cost or reproduction cost. The relation widely recognized now between actual cost and reproduction cost because of changing prices, hardly appeared in economic discussions prior to 1900.

Economists then talked of normal values and normal prices, and viewed them as equivalent to and determined by the normal cost of production. Now they have largely abandoned the idea of such a normal cost and a normal value, although it has not entirely disappeared. They have come to realize that there is no such thing as normal prices or normal values or normal costs, but that these categories are constantly shifting with changing price level. A survey of economic history as far back as the facts are available, shows that prices are in constant flux, and that there is no standard normality. At present, with a much higher price level which has been maintained with slight changes for several years, the costs of production are as normal for this time as were the costs in 1898 at that particular low point of prices. This constant shifting of prices, however, is a fact generally recognized only recently and had hardly entered into the discussion of values and costs a quarter of a century ago. And now the terms cost and value are used often synonymously even by accountants, engineers and lawyers, if not by trained economists.

The fair conclusion is that the Supreme Court did not have the conception of price changes in setting forth present cost as compared with original cost in relation to fair value in *Smyth v. Ames.* It should not be credited with a concept which developed in a later period. It employed the terms loosely in an illustrative fashion, and not precisely with exact economic distinctions.

Let us repeat: There was no practical reason in the price distinction between reproduction cost and actual cost at the time. This date, as already stated, marked the low point after a long period of falling prices. After this there was a turn followed by a gradual increase in prices. The shift, however, was not clearly perceptible until the lapse of several years and was not appreciably felt till considerably later as a modifying factor in the reasonable valuation for rate making. It was not until about 1910 that the price difference between reproduction and actual cost appeared clearly in the technical papers discussing rate valuations. But even then there was not the definite comprehension of the shift in prices as affecting the interest of the investors in public utility properties. The clear understanding has come only with the great price advances during and after the war.

9. First Consolidated Gas Case

There was no important rate case before the Supreme Court during the entire decade immediately following *Smyth v. Ames.* The first case of prominence was that of *Willcox v. Consolidated Gas Company* in 1909, involving the constitutionality of the eighty cent gas rate fixed by the legislature of the State of New York.[5]

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[5] Willcox v. Consolidated Gas Co., 212 U. S. 19. This will be referred to as the first Consolidated Gas case; to be distinguished from Newton v. Consolidated Gas Co., 258 U. S. 165, decided in 1922, which will be designated the second Consolidated Gas case.

In this case the company claimed that the eighty cent rate was inadequate and resulted in the confiscation of its property. The case had been referred to a special master, and the rates were found confiscatory by the lower court. On appeal to the Supreme Court, however, the rates were upheld. On the matter of valuation, the Court states:

> "And we concur with the court below in holding that the value of the property is to be determined as of the time when the inquiry is made regarding the rates. If the property, which legally enters into the consideration of the question of rates, has increased in value since it was acquired, the company is entitled to the benefit of such increase. This is, at any rate, the general rule. We do not say there may not possibly be an exception to it, where the property may have increased so enormously in value as to render a rate permitting a reasonable return upon such increased value unjust to the public. How such facts should be treated is not a question now before us, as this case does not present it."

A casual reading of this quotation does indicate a recognition of a higher reproduction cost than actual cost of the properties, and that the increase enters into the fair value. But, there is no exact definition of terms; nor is the idea of reproduction cost directly presented or compared with actual cost; neither category was separately mentioned. Moreover, there was no issue raised on the point of price changes, so that there was no occasion for emphasizing such increases. It is even doubtful whether reproduction cost, except as to land, would have yielded a higher figure than actual cost. The time of the valuation was as of 1905, where no marked increase over the low point in 1897 had taken place. The reproduction cost might have been lower than the actual costs which extended far back to the higher level of prices in the 1880's and 1870's. But there were no alternative or contrasting figures before the Court as a choice between lower and higher actual and reproduction cost. The issue as we understand it was not before the Court.

The passage must not be read from the standpoint of our present understanding and our current conflicts in valuation. It must be regarded from the point of view of its own time and conditions. If it is thus limited, it cannot be turned into an approval of reproduction cost as opposed in price distinction to actual cost. It says nothing more than that the fair value must be determined as of the time when the validity of the rates is in question. How the value is to be computed is not defined and is not made clearer than in *Smyth v. Ames*. The statement makes no advance in precision of definition.

Let us recall the interchangeability of terms; that value was freely used for cost; that the distinction was not generally recognized and maintained. If, then, cost is substituted for value in the above statement, we have probably a fairly accurate presentation of what the Court meant. We shall then have the cost of the properties in use at the time the rates are under inquiry. If the cost has increased since the property was acquired, the increase must be recognized; this would include in the valuation the cost of the improvements and additions made since the original installation or acquisition of the property. But even such additions may not be recognized if the cost has been excessive or the properties not required for the public service. The emphasis upon the time of the rate inquiry merely signifies the inclusion of the cost of all reasonably necessary enlargements of the original properties. This emphasis carries out a distinction made in *Smyth v. Ames,* but it conserves the actual cost and does not pass to the reproduction cost basis of valuation in the sense of varying prices.

In the latter part of the passage the reference may possibly be to increase in land values, and may not mean primarily cost. But this would be interpretation and not clear statement of fact. An enormous increase in value which would not permit a return may have reference to advances in urban real estate values, which is a separate matter from general price changes involved in the present day contrast of actual and reproduction cost. In any event, however, the idea of value is not sufficiently defined to justify the conclusion that the Court had in mind a general price distinction in the valuation. It is more likely, however, that the reference was to excessive, premature or prohibitive expenditures which could not practically or reasonably be sustained by rates charged to the public. Such expenditures have been found frequently in the experience of rate making.

But, whatever one's interpretation of the language employed by the Court, the fact is that the rates in the first Consolidated Gas case were upheld. Consequently, any possibly implied reference to reproduction cost as a price distinction to actual cost, or to increase in land value, was in the nature of dictum, not necessary for the decision in the case. The point as to either meaning would have the effect of a decision only if it had been necessary to upholding the rates. And, as will appear, the point has never received such conclusive sanction of an actual decision declaring rates void. Throughout in all the cases, the distinction must be kept in mind between what is actually decided by the order of the Court and what is said in the majority opinion in the form of dicta.

10. CHANGE IN PRICES OF COMMODITIES AND IN PRICE LEVEL

The first occasion when the shift in prices had been sufficient to make perhaps material difference between actual and reproduction cost, was in the Minnesota rate cases decided in 1913. In the opinion, Mr. Justice Hughes said:

> "It is clear that in ascertaining the present value we are not limited to the consideration of the amount of the actual investment. If that has been reckless or improvident, losses may be sustained which the community does not underwrite. As the company may not be protected in its actual investment, if the value of its property be plainly less, so the making of a just return for the use of the property involves the recognition of its fair value if it be more than its cost. The property is held in private ownership and it is that property, and not the original cost of it, of which the owner may not be deprived without due process of law." (Minnesota rate cases, 230 U. S. 352, 454.)

This language seems to recognize an increase in value above the cost of the properties and seems to indicate a recognition of the price distinction between reproduction and actual cost of construction. But, at the same time, the Court disallowed special applications of the reproduction cost theory and pointed out particularly that what was to be established is the fair value which is a matter of reason and common sense in the particular case, not dependent upon formulas. Again there was reference to *Smyth v. Ames*, and the opinion as a whole does not indicate any deliberate limitations upon the rate making bodies in their adoption of principles and methods of valuation.

Although there had been a marked advance in prices from the time of *Smyth v. Ames* to the Minnesota rate case decision, this general shift was not referred to in the opinion. The level of prices had advanced about 50% to which there was no direct reference. There is a question, therefore, whether the Court even at this date understood the general significance of price changes involved in reproduction cost compared with actual cost.

It is well to point out that there may be two kinds of changes in values over a period of years: (1) Variation in prices of certain commodities without special effect upon the general price level; and (2) a change in the value of money in relation to practically all commodities as reflected in the price level.

The first kind of change has been the more commonly understood and has come within the experience of all intelligent people. It applied more particularly to the change of land values. In every growing municipality the phenomenon is common and quite generally understood that there is a gradual increase in the value of land compared with other commodities. The same is true in the development of the entire country. There is gradually, with the growth of population, an increase in land values in contradistinction to the change of prices in other kinds of goods. And such changes, increases or decreases, may take place in any commodity without affecting the general price level.

Changes, particularly in land, had been going on for the entire period of regulation. This factor appeared especially in the Minnesota rate cases, where rights of way and terminal properties in large municipal centers were involved. An important question, therefore, arose, how to appraise the rights of way and terminal properties, or other land, which had been obtained earlier either as gifts or at much lower prices than the value of contiguous land at the time of the rate inquiry. The language in the opinion indicates that the Court had in mind only such changes in values as are due to social causes affecting particular classes of property over a period of time. There is nothing to show that the Court clearly comprehended the general rise in price level which had taken place during the preceding decade. But it is this factor which is the outstanding consideration in the present day distinction between reproduction and actual cost of properties.

But whatever language may have been employed as to principles and methods of valuations, in two of the three cases before the Court the rates were upheld, so that the pronouncements were mere dicta. In one case, however, the rates were found confiscatory, but they were so inadequate that they failed to bring a fair return on any basis of valuation. If this is taken into consideration, together with the fact that the shift in price level was not mentioned, there is no ground for concluding that the Court intended to prescribe a definite formula for rate making other than fair value without specific definition or limitation.

11. LANGUAGE NOT TO BE TECHNICALLY CONSTRUED

As a technical matter, it might be strongly argued that just as in his reference "if the value of its property be plainly less" than the investment, Justice Hughes meant to eliminate extravagant or uneconomical expenditures, so in "the recognition of its fair value if it be more than its cost," the thought was of additions, extensions and improvements above the original investment. This might be a somewhat forced interpretation, but not more so than a rigid imputation of reproduction cost. To illustrate further the non-technical use of language, to which no highly specific meaning may be attached, let us refer to the last sentence quoted above from Justice Hughes' opinion in the Minnesota rate cases:

> "The property is held in private ownership and it is that property, and not the original cost of it, of which the owners may not be deprived without due process of law."

Viewed as a technical statement, what does it mean, especially if considered in the light of other legal or constitutional principles? Justice Hughes for the moment seemed to have in mind the conception of condemnation and its relation to the process of rate making. But, are we to conclude that he really meant to express as a legal fact that the condemnation idea applies to public utility regulation? If we were to adopt the idea, however, that rate making involves the taking of something private for public purposes, let us ask just exactly what it is. The companies, in any case, were not being deprived of their physical properties; they continued their undisputed ownership and controlled their own management, except that they were limited in the rates charged to the public. Consequently, if anything was taken for public purposes under the principle of condemnation, the thing taken was not the properties as such, but the services produced. The real object of condemnation, therefore, would be to fix the value of the services taken, and not the value of the properties which remained in the possession, ownership and control of the companies. Under a technical interpretation, assuming the theory of condemnation to apply, the sentence appears inapt.

But why conclude that Justice Hughes meant actually to apply the condemnation idea, and thus do violence to other underlying conceptions of public utility relations recognized by the Court since the time of *Munn v. Illinois* in 1876? The problem is to fix reasonable rates, not to condemn private property or any other tangible thing for public purposes. The reason for fixing rates by public authorities lies in the already existing public interest in the properties and their operation; and this interest has been recognized by the Court from the first decision on rates. If this view is correct, then the force of rate making is not the condemnation of anything, but the mere conservation of the public interest. If the rates are valid, there is no condemnation or destruction of any private property.

It is only when they are unreasonable that they invade private rights and may be said to take or destroy or confiscate private property. The problem, then, is to fix a measure of the public interest or private rights, so as to protect and promote the public interest without impairment of the fundamental rights of the investors. This manifestly is not a problem of condemnation, but of clear differentiation and measurement of public and private interests.

Of course, by unreasonable rates the investment, or fair value, must be viewed as being confiscated even if the ownership of the properties remains with the companies; and thus might be considered as taken for public purposes. But it is this very thing that is illegal and cannot be perpetrated under the constitution. Thus the investment or fair value, or the essence of the property, indeed cannot be taken for public purposes. The idea of condemnation simply does not apply to what is involved in public rate fixing or in the constitutional inquiry into the legality of the rates. If any private rights are destroyed, the rates by that fact are illegal, and immediately the very force of condemnation is arrested.

Technically the conception of the quoted sentence simply does not stand consistent analysis. Its meaning must be taken with the variety of other statements made in valuation discussion by the Court.

Confiscating or the actual impairing of private rights is prohibited. The whole question is how to measure the impairment, or more accurately at what point rates fixed by public authority go beyond the legitimate public interest and encroach on private rights. The general measure announced repeatedly is that the rates must permit a fair return on the fair value of the properties used for the public service. But exactly how the amount of such fair value is to be determined, the Court has not said explicitly and has refused in this case to state any more concretely than in *Smyth v. Ames.* Throughout the language has been left general and flexible enough to meet the developing requirements of particular cases or the conditions of public policy as determined by reasonable action of the legislatures.

12. CHANGE IN PRICE LEVEL RAISES ISSUE

The real issue between reproduction cost and actual cost appears only with the great shift in prices due to the war. Prior to the war the rise had been so gradual over a long period of years, with periodical recessions and fluctuations, that the change had not become an important issue in valuations.

Moreover, there had been a very rapid development in methods of construction since the low point in price level. Improved designs of machinery had been steadily introduced, and more economical facilities were established. These changes in the arts were themselves strong factors for a lower reproduction cost compared with the actual cost of the properties. The force of obsolescence was operating rapidly during the period. Consequently, up to the war, the cost of reproduction of the properties or of providing the service, in many instances would have been less, and usually not much greater, than actual cost. In other words, the gradual increase in prices from 1898 to 1914 was counterbalanced to a large extent by the gradual reduction in costs due to improvements in design and methods of construction. There was, therefore, no great significance in the differentiation between actual and reproduction cost, and the distinction was not clearly indicated in the language of the Supreme Court in any of the important cases before the war.

After the tremendous price upheavals incident to the war, the issue between reproduction and actual cost was soon sharply drawn. It became a serious question whether the companies should be allowed a return only upon their net investment in the properties, or upon the adjustment of the investment to the much higher price level. There was involved a clear factor of justice. If the return was strictly limited to actual investment, its purchasing power to the investors would be reduced with the increase in price level.

13. Galveston Case

The first important case that came before the Supreme Court following the sharp increase in prices, was that of the Galveston Electric Railway Company, decided in 1922.[6] Up to October 1, 1918, the fare charged by this company had never been more than five cents. The Municipal Board of Commissioners, which possesses regulatory powers, authorized a six cent rate from that date up to June 5, 1919. On the latter date it ordered a return to the five cent fare because of the recession in prices after the armistice. After operating under the reduced rate for eleven months, the company brought suit in the federal court. The matter was referred to a special master, who found the rate confiscatory, but he was overruled by the lower court, which upheld the rate. An appeal was then taken to the Supreme Court of the United States, which affirmed the decree.

In this case, the issue of actual cost versus reproduction cost was definitely presented. The basic valuation as adopted by the lower court was actual investment plus 33⅓% in recognition of the higher price level. The actual investment was determined by taking the original cost of the properties less depreciation. On this basis the Supreme Court sustained the rates fixed by the Board of Commissioners but it did not indulge in discussion of principles. The question then is, what light did the decision and the opinion by the Court throw upon the issue? While substantial allowance for the higher level was made in the valuation by the lower court, prices had risen about 110% above those of 1913, and the company's reproduction figures were based on the assumption that the new level would settle around 60-70% above 1913. Inasmuch as an adjustment of only 33⅓% was allowed, reproduction cost was given a weight of less than one-fourth in the valuation.

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[6] Galveston Electric Co. v. City of Galveston, 258 U. S. 388.

The important point, however, is that the rates in question were upheld. While the judgment was directly based upon a valuation which added 33⅓% to actual cost, there is nothing in the opinion to indicate that the rates would not have been upheld if a smaller percentage adjustment had been made for the 110% increase in prices, or if, indeed, 6% or 7% had been clearly realized upon the actual investment in the properties. And, let us repeat, there was no discussion by the Court of price changes. The rates were simply approved.

14. Second Consolidated Gas Case

The next decision came in the second Consolidated Gas case. This involved the validity of the 80¢ gas rate fixed by the Legislature of the State of New York in 1906. The validity of this rate had been upheld earlier in 1909, and it continued in force until the war upheavals in the costs of operation. In 1919 the Consolidated Gas Company obtained from the federal court a temporary injunction against the 80¢ rate on the ground that it was confiscatory, and the matter was referred to a master. Long investigations and hearings followed, going into valuation, operating costs and returns. The master reported that the rates were confiscatory, but he based his valuations upon the actual cost of the properties, plus allowances for overheads, but without deduction for depreciation. His report was for the most part sustained by the lower court and a permanent injunction was issued against the 80¢ rate. Then an appeal was taken by the Attorney General of the State of New York to the Supreme Court of the United States. Elaborate briefs were filed covering the various points at issue. The decision of the lower court was confirmed. In the opinion the Court made little reference to valuation and did not discuss reproduction or actual cost.

The Court found the rates confiscatory, not on the reproduction cost basis, but upon actual cost. It found that the companies were not earning more than 2% or 3% upon the actual cost, so that the inadequacy of the 80¢ rate did not depend upon a recognition of reproduction cost at the higher price level.

15. SOUTHWESTERN BELL CASE

The next important case was that of the Southwestern Bell Telephone Company, decided May 21, 1923.[7] In this case a reduction in rates had been ordered in 1919 by the Public Service Commission of the State of Missouri. The Commission had made an estimate of the actual cost of the property less depreciation. The valuation was not detailed; it was based upon a partial estimate and as a method of appraisal was open to serious technical objections. Nevertheless, it rested substantially upon the original cost of the properties, less depreciation.

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[7] Southwestern Bell Telephone Co. v. Pub. Serv. Comm. of Mo., 262 U. S. 276.

The rates were contested by the company and a temporary injunction was obtained from the lower federal court. An appeal was taken by the Attorney General of the State of Missouri to the Supreme Court of the United States which affirmed the order of the lower court. In its opinion presented by Mr. Justice McReynolds, the Court criticized the Commission because it obviously

> "undertook to value the property without according any weight to the greatly enhanced cost of material, labor, supplies, etc., over those prevailing in 1913, 1914 and 1916. . . . It is impossible to ascertain what will amount to a fair return upon properties devoted to public service without giving consideration to the cost of labor, supplies, etc., at the time the investigation is made. An honest and intelligent forecast of probable future values, made upon a view of the reliable circumstances, is essential. If the highly important element of present costs is wholly disregarded such a forecast becomes impossible. Estimates for tomorrow cannot ignore prices of today."

This passage was heralded by the companies as a positive confirmation of their claim that they are entitled to a return upon reproduction cost of the properties instead of actual cost. The issue had been squarely presented, and the opinion apparently recognized that reproduction cost must be given weight in the valuation, especially with regard to future level of prices. The language is somewhat diffused and not clearly specific, but the recognition of reproduction cost appears definite.

Two points, however, should be noted. The first is that although the higher price level was clearly emphasized, the majority opinion added only about 25% to the investment in setting up a valuation on which to judge the adequacy of the rates. The Court made no explanation why it took only 25% when the increase in prices was more nearly 100%. At most, therefore, only one-fifth as much weight was given to reproduction cost as to the actual cost of the properties. But why one-fifth? Why not some other ratio? Is the insistence merely upon some weight, without regard to the proportion?

The second point is that the rates fixed by the Commission apparently were inadequate on any basis of valuation that might have been reasonably employed. This was brought out in the minority opinion by Mr. Justice Brandeis, concurred in by Mr. Justice Holmes. The minority shared in the decision itself, that the rates were confiscatory, but differed sharply with the majority as to the basis on which confiscation should be judged. Mr. Justice Brandeis set forth in a masterful manner actual or prudent investment as the only proper basis for determining the adequacy of the return, and even by this test found the rates confiscatory. His opinion is the clearest judicial reasoning which, from the standpoint of definite and effective rate regulation, has ever been presented.

But in view of the concurrence of Justices Brandeis and Holmes in the decision itself, the conclusion is inevitable that the rates were confiscatory on any reasonable basis of valuation. Consequently the strong pronouncement in the majority opinion in favor of reproduction cost comes under the category of dictum. This appears particularly true when the Southwestern Bell case is considered in conjunction with two subsequent cases decided simultaneously less than a month later.

16. Bluefield Water Case

Of the two cases, decided on June 11, 1923, the Bluefield case [8] closely parallels the Southwestern Bell, and taken by itself would serve as a complete support both of the decision and the declaration on principles of valuation.

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[8] Bluefield Water Works and Improvement Company v. Public Service Commission of the State of West Virginia, 262 U. S. 679.

This case involved water rates fixed by the Public Service Commission of West Virginia and attacked by the company as confiscatory. The commission had made a valuation of the properties on the basis of actual cost less depreciation. The company obtained from the federal court an injunction against the enforcement of the rates. An appeal was taken by the Attorney General of the state to the Supreme Court of the United States, which confirmed the decree of the lower court.

On the matter of valuation, the majority opinion by Mr. Justice Butler referred with full approval to the Southwestern Bell case. He pointed out that no weight was given to cost of reproduction on the basis of 1920 prices, and that "this resulted in a valuation considerably and materially less than would have been reached by a fair and just consideration of all the facts. The valuation could not be sustained." This seemed to confirm the claim to reproduction cost.

The decision and opinion, taken with the Southwestern Bell case, made a strong position in favor of reproduction cost; especially that substantial weight should be given to the higher price level. But in this case also Justices Brandeis and Holmes concurred in the decision, but referred to the minority opinion in the Southwestern Bell case to explain their concurrence. They agreed, therefore, that the rates were confiscatory, but based their agreement on the fact that there was not a fair return on the actual investment, while the majority opinion emphasized the reproduction cost factor. In this case, therefore, as in the preceding one, the discussion of reproduction cost appears to fall into the realm of dictum.

17. Atlanta Case

We next come to the Atlanta case,[9] decided on the same day with the Bluefield, and must therefore be considered with it in determining the position of the Court on valuation.

In this case the gas rates for the City of Atlanta had been reduced by the Railroad Commission of Georgia and attacked by the company as confiscatory. They were reviewed by the federal court and sustained. Then the company appealed to the Supreme Court of the United States, and, contrary to the Southwestern Bell and Bluefield cases, the rates were upheld.

The valuation, as in the other two cases, was based by the commission practically on actual investment. The properties in existence on January 1, 1914, were valued substantially at their actual cost, or reproduction cost as of that date, and apparently with deduction for depreciation; and the properties installed since January 1st, 1914, were taken at their actual cost. There was a further allowance of $125,000 for appreciation in the value of land owned by the company. The final valuation was $5,250,000, compared with $9,500,000 claimed by the company on the basis of reproduction cost. The commission's findings and the approval of the district court were sustained by the Supreme Court with the statement that "the refusal of the commission and of the lower court to hold that, for rate-making purposes, the physical properties of a utility must be valued at replacement cost, less depreciation, was clearly correct."

In this case, therefore, the Court definitely declared that as a matter of law a company is not entitled to a return based upon reproduction cost less depreciation.

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[9] Georgia Railway and Power Company v. Railroad Commission of Georgia, 262 U. S. 625.

Furthermore, this seems clearly to transcend the realm of dicta and to constitute a decision, because it was determinative as to whether the rates were upheld or found to be confiscatory.

While $125,000 was specifically allowed for increase in land values, this was insignificant in the total valuation and would be a negligible recognition of the reproduction cost factor. The valuation rested as definitely as could be expected upon net actual investment in the properties, and yet was approved despite the strong contrary statements in the other two cases as well as against a strong dissenting opinion.

The opinion was delivered by Mr. Justice Brandeis, who practically ignored the discussion in Southwestern Bell on reproduction cost. He did point out that "Here the Commission gave careful consideration to the cost of reproduction, but it refused to adopt reproduction cost as the measure of value." The inference might be drawn that in the other cases reproduction cost was not considered at all, and that it is the absence of consideration which was the defect in the valuation. But mere consideration without giving actual weight to reproduction cost, would hardly be a distinction on which the Court would rest an approval or a rejection of rates. A decision upholding rates or declaring them confiscatory must presumably rest upon the facts, as viewed by the Court, whether or not there was actual confiscation.

The Atlanta case, in the discussion of value, was clearly in conflict with its companion, the Bluefield and the somewhat earlier Southwestern Bell case. This conflict was pointed out by Mr. Justice McKenna, who dissented in a minority opinion. He viewed the Atlanta case as a complete contradiction of the other two cases and stated that "the contrariety of decision cannot be reconciled."

18. Three Cases Harmonized

The three cases just reviewed present the difficulties with which the Court has been battling and the considerations to which it has given weight. Moreover, they show clearly that if we rely upon the language of the majority opinions, there is a lack of harmony that amounts to indecision and conflict of decision. Except by obvious distortion and twisting of words, the pronouncements on valuation in the Southwestern Bell and Bluefield cases did not square with the language in the Atlanta case. If only the language of the Court in these three cases were to be taken into consideration, there would unquestionably be the contrariety of opinion referred to by Mr. Justice McKenna.

The reconciliation between the three cases cannot be established by comparison and matching of language on valuation in the majority opinions. But it can be found in the actual decisions as to whether or not the rates were confiscatory. A sharp distinction must be made between what the Court did and what it said. The decisions must be separated from the dicta.

In the three cases the decisions themselves can be readily harmonized. In the Southwestern Bell and the Bluefield cases the rates were so low that they did not bring a fair return on any reasonable valuation, and were found confiscatory by Justices Brandeis and Holmes even on actual investment. In the Atlanta case, however, the rates were adequate to bring a fair return on the actual investment and were sustained, while on the reproduction cost claimed by the company the return would have amounted to only about 4% and would have been inadequate.

The three actual decisions, therefore, indicate that the ultimate measure of confiscation is whether or not a fair return is realized upon the actual net investment in the properties. If there is a fair return upon the actual net investment, as in the Atlanta case, the rates are upheld, even if no allowance is made for the higher reproduction cost. If, however, the rates do not bring a fair return even on actual investment, as in the Southwestern Bell and Bluefield cases, they are confiscatory.

19. Decisions and Dicta

The view just presented as to the three recent cases, can be applied to all of the rate cases that have been passed upon by the Supreme Court of the United States. The Court throughout has been exceedingly cautious in declaring rates confiscatory. It has been extremely careful not to invade or interfere with the rate making functions of the legislatures or commissions. It has invalidated rates only where they clearly resulted in confiscation of private investments; where there could be no dispute on any fair basis as to the fact of confiscation.

The analyses that have been made from time to time of the Supreme Court decisions on valuation have been based almost throughout upon the language employed in the majority opinions. It is true, that citations might be selected from majority opinions that lean strongly to reproduction cost, or at least that a substantial weight be given to this factor. It is equally true that by another selection from majority opinions strong support can be found for actual cost as the proper basis of valuation. But we may properly concede that in general the language of the majority opinions perhaps favors the conclusion that some weight should be given to reproduction cost, although this appears from inference and not from explicit statement.

If, however, we search behind the opinions, and study the decisions themselves, we find that the Court has never declared rates confiscatory where they brought as much as 6% or 7% return upon the actual net investment. As a matter of fact, the Court has declared rates invalid in very few cases and where it did find confiscation the rates were inadequate on any basis that could reasonably be employed.[10] That this is true appears as already stated, in the recent Southwestern Bell and Bluefield cases. It is true in the second Consolidated Gas case; also in the Minnesota rate cases. And it was true in *Smyth v. Ames,* where the rates were confiscatory on any reasonable basis.

A fair conclusion, viewing the Court's decisions in contradistinction to dicta, is that it will not interfere with rates fixed by public authorities unless they are clearly and unquestionably unfair to the investors and produce manifest confiscation. And the ultimate basis for determining this fact is, not reproduction cost on a higher price level, but the actual net investment in the properties. And even on net investment, the fact must appear clear that the return is inadequate before the rates are declared void.

It must be conceded that probably the majority of the Supreme Court, as now constituted, believe that in making a valuation some reasonable or substantial weight, without any clearly perceived minimum proportion, should be given to reproduction cost because of the great shift in prices and the consequent reduction in the purchasing power of money. Undoubtedly, there is the feeling that there should be some compensation to investors for the change in price level. But the last three cases reviewed seemed to show clearly that, whatever may be reasonably done in fairness to the investors, rates will not be nullified unless they fail to bring a fair return on actual investment. This, at least, appears to be the only rational basis of harmonizing the Atlanta case with the Bluefield and Southwestern Bell cases.

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[10] In his minority opinion in the Southwestern Bell case, Mr. Justice Brandeis presents an analysis of all the rate cases passed upon by the Court since Smyth v. Ames. There have been only 25 cases in which the question of fair return or fair value was involved, and in no case were the rates declared void because the valuation determined by the commission was too low or the assumed rate of return insufficient.

20. Conclusion

The analysis here presented will square reasonably with a broad survey of all the rate cases before the Supreme Court. If this view is correct, there is no reason why the legislatures and the commissions should not proceed with the formulation of definite principles of valuation to be applied to existing investments. Within broad limits the legislatures are free to determine policies and provide methods of regulation which will bring order out of existing chaos, and place regulation upon a permanent and workable basis.

There is, we believe, no danger that any reasonable and consistent principle of valuation adopted by the legislatures would be overruled by the courts, which throughout must follow the views of the Supreme Court of the United States. The likelihood of judicial interference would be particularly small if the principle is made a part of a comprehensive policy, systematically designed to conserve the public interest, basing rate making upon facts and raising it from the chaos of present confusion and interminable litigation. The principle, of course, must not invade reasonable private rights and must really be enacted for the public interest. If it is established on the broad grounds of constructive policy and if it does not deal arbitrarily with investments, it is certain to pass judicial scrutiny, especially if it is sufficiently elastic to meet extraordinary conditions of individual properties. The companies should be treated reasonably, and the more important adjustments for reasonable treatment will be discussed in the following chapters.

CHAPTER VI

INVESTMENT, REPRODUCTION COST, AND CHANGING PRICE LEVEL

1. Fixed rate base prime requisite. 2. The issue defined. 3. Reproduction cost shiftable. 4. Fallacy of "normal" prices. 5. Reproduction basis unworkable under declining prices. 6. Factors of uncertainty in future price level. 7. Problem concerns existing properties. 8. Present price level comparatively high. 9. Actual cost is weighted average. 10. Investors expect return on unchanging base. 11. Utility investors expected limited return. 12. Most investors contracted for limited return. 13. Possible adjustment for stockholders. 14. Adjustment to have minor effect. 15. A definite reproduction cost factor. 16. Reproduction valuation invites inflation. 17. Fallacies of some actual cost theories. 18. Reproduction cost of service. 19. Cost elements, not value. 20. Adjusted investment as "fair value."

1. FIXED RATE BASE PRIME REQUISITE

The survey of court decisions in the preceding chapter shows clearly that the regulatory authorities are free to fix a rate base that is reasonable, and to establish policies and machinery to protect the public interest.

The fundamental prerequisite of effective regulation is a rate base which will not fluctuate with changing prices and conditions of operation. As for future investments, this would require that additions to the rate base represent actual expenditures for improvements and additions to the properties, which would be a simple matter to provide. The difficult problem, however, is how to treat the existing properties so as to establish a definite and unchangeable rate base for the future. This requires an appraisal and the determination of a definite sum. The principal question is whether for this purpose actual investment or reproduction cost of the properties should be employed. And above everything else the question is whether the increase in price level since the time of the actual installation of the properties should be recognized in the valuations. The inquiry of this chapter is whether for the determination of a fixed future rate base for existing properties, actual investment or reproduction cost should be used.

2. The Issue Defined

It is well at the outset to state the issue as clearly as possible. If the determination is to be based upon actual investment, it requires first of all an inventory of the physical properties used in the public service. The starting point is a survey of the properties now in existence. No other procedure would be possible, since the charges to the property accounts are not reliable and the outstanding securities may or may not represent actual investment. The only way to resolve these uncertainties is to take into consideration the actual properties in service. After an inventory has been made, the items should be priced at their original cost of construction or installation. In many instances such cost can be determined from the accounts, or other records, of the corporation. This is especially true of installations made since active regulation began. Where, however, the costs cannot be found in the records, the time of installation can be approximately ascertained and a fairly satisfactory estimate of the original cost established.

After the original cost of the various properties has been ascertained, and fair allowances made for the various intangible or overhead expenditures, reasonable deductions should be made for the impaired usefulness of the properties, i. e. for depreciation.[1] The difference between the original cost and the amount of the computed depreciation, would represent the net investment in existing properties to be devoted to future service and entitled to a return. This amount should be taken on the books of the company, with the accounts rewritten accordingly, and should serve as a permanent rate base for the future.

If, however, the valuation, as a fixed sum for the future, were to be based upon reproduction cost, then the inventoried properties would be priced not at the original cost, actual or estimated, but at present costs at the time of the appraisal. This would automatically recognize the changes in prices since the time of installation of the various units of property.[2]

While we believe that the actual net investment in the present properties as above defined, with some reasonable adjustments, should be used as the fixed future rate base, our chief concern is that definiteness should be established. The important point to be realized is that rate regulation will be necessarily ineffective if we continue for the future with undetermined facts and indefinite principles and methods of valuation. For satisfactory regulation, we must have a fixed and unvarying rate base, which would be increased only with actual additional investments. At every point it should be a definite sum shown by the accounts not subject to dispute and litigation.

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[1] For a discussion of overheads and depreciation, see Chapters VII and VIII.

[2] It should be noted, however, that these adjustments might vary considerably from the general change in price level, or in the purchasing power of money, because the sum of changes in the items composing the particular properties might differ materially from the change in average prices, or price level. The use of reproduction cost as a means of compensating the investor at times of rising prices for the loss in purchasing power of his return (see Sec. 12, this chapter), is therefore at best only an approximation. The issue has come to be fundamentally one of adjustment to changing purchasing power of return, although the method by which the adjustment is mostly proposed is by basing the return upon the reproduction cost of the properties.

3. Reproduction Cost Shiftable

If the necessity of a non-shiftable rate base for successful regulation is once clearly comprehended, it must be evident that reproduction cost is not usable for the future and that actual investment must be employed at least for additional improvements and enlargements of the properties, even if some other basis is used for the appraisal of existing facilities. Actual investment furnishes a definite sum which when once established does not vary whatever the change in conditions, provided the properties are properly maintained through repair and provision for depreciation.

The inexorable defect of reproduction cost as a general rate base, is that it shifts with changing price level or even with fluctuations in prices of the constituent elements of the properties. It constitutes a varying sum, which can not be placed under accounting control, but must be redetermined with every price movement to provide the return to which the investors are entitled. If we were to adopt reproduction cost as the general rate base for the future, we should be struggling constantly with the problem of repeated valuations. Just as in the past, it would be exceedingly difficult and cumbersome during a period of rising prices and increasing costs to adjust rates upward, and during decreasing prices to make adjustments downward. At every point the divergent interests of the investors and the consumers would appear. To reach a decision, would involve extensive hearings and, just as in the past, the procedure would clog up the machinery of regulation, with unsatisfactory results to both the public and the investors.

4. Fallacy of "Normal" Prices

The impossibility of having reproduction cost as the general basis of rate making is especially clear if we once face the fact that prices are continually shifting. A great deal of discussion has been devoted to the idea of "normal" prices, and the present range is frequently referred to as abnormal. But what prices are normal? As far back as reliable data can be obtained, there have been constant fluctuations. For one period there was a movement upward, and for another downward. At no point can anyone definitely predict what the course will be for any considerable time in the future.

If we take into account the period since the right to regulate was first recognized in *Munn v. Illinois*, we see that the normal price idea is a delusion, that changes are continuous and extensive, and, if reproduction cost is taken as the general rate base, that regulatory authorities would face constantly the problem of new appraisals. To make this point clear let us present briefly a survey of the price changes since the end of the Civil War.

The curve here presented shows that from 1865, with minor fluctuations, there was a steady downward swing until 1897. This marked the low point and incidentally was the year before the famous pronouncement in *Smyth v. Ames*. From then on there was a steady rise, with minor variations, until 1914. Then there were successive sharp increases, which reached a maximum peak in 1920 of about 150% above 1914 and 237% over 1897. Then followed a sharp decline, reaching a low point about October, 1921. Since then there has been a slight increase with unimportant variations. At the present time the point of the curve is approximately 60% above 1914, but about 130% above 1897.

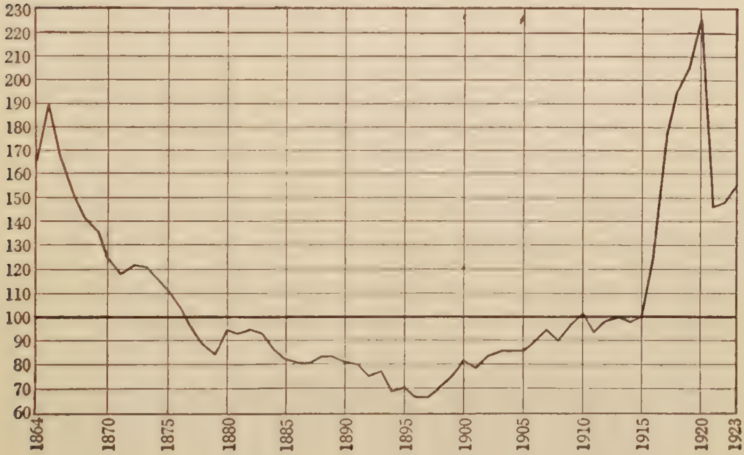
With these facts as to past fluctuations beyond dispute, who can predict what the future course of prices will be? Are we now at the beginning of a long swing

WHOLESALE COMMODITY PRICES IN THE U. S.

1864–1923

1913 Prices = 100

(Figures from U. S. Bureau of Labor Statistics, Bulletin 1626)



downward, or do we face a long upward movement? What economist can predict either course with any high degree of certainty? Can we refer to any point in the curve as representing the normal price level? Assume that for the next fifty years prices will fluctuate as widely as during the period of the curve, then how can reproduction cost be employed as a workable basis of rates? With constantly shifting prices, rate regulation would be practically impossible. No given valuation of the properties would be useful for more than three to five years. Repeated appraisals would be necessary, and at every point there would be disputes as to the increase or decrease in the rate base, with renewed discussions as to the allowance for the various intangibles and overheads. Effective regulation would be defeated by the difficulties of successive rate adjustments.

During the greater part of the period, since *Munn v. Illinois,* no active or constant rate regulation was attempted. But during the past two decades we have pretended to have continuous rate making but have proceeded without clear definition of principles, and the results have been unsatisfactory because of the uncertainties and difficulties of successive rate adjustments. We devoted our major energies to disputes without deciding anything and without ever finishing a controversy. The process of rate making has been too uncertain and cumbersome, and has largely defeated the purpose of regulation.

To adopt a shifting rate base for the future would mean to continue, or to aggravate, the unsatisfactory practices current the past twenty years. The only reasonable course, if we wish regulation, is to recognize the necessity of a rigid rate base, which can be kept under accounting control, eliminating disputes and fixing definitely the rights of the investors and the obligations of the public. When such a fixed rate base has been established, the ground will be cleared for automatic rate control according to changes in operating costs. For this purpose, actual investment is the requisite basis, and reproduction cost is futile.

It may be suggested that instead of a periodic reappraisal of the properties as prices change, the rate base might be adjusted in accordance with an index number, which would show periodically the percentage change in average prices. But there is hardly an index number which has been so generally accepted as to be used for such an important purpose. There would inevitably arise wranglings between the interested parties each time that an adjustment were attempted as to which index is the more representative. These disagreements would still cause delay and deadlock in the adjustment of rates, and the disputes would embrace also the precise methods of the computation even if a given index number were finally agreed upon.

Moreover, the use of index numbers is as yet limited to economic discussions and has not reached the realm of actual business conduct. Until business men quite generally make contracts in terms of index numbers, it is futile to attempt basing comprehensive control of huge and varying interests upon such a mechanism. It is quite inconceivable that security issues may be based upon investment subject to adjustment to index numbers as to payment of interest, dividends, principal or liquidation. We have here fundamentally and practically a problem of currency control and not of adjustment of business practice. Besides, however, the fact remains that in any event, as shown in the next section, any variation in the rate base according to changing price level, will not work during a long period of falling prices.

5. Reproduction Basis Unworkable under Declining Prices

In the preceding section the point emphasized is that for the future satisfactory rate making, not to defeat itself by cumbersome methods and procedure, will require the adoption of actual investment as the general rate base. This argument, however, is further supported by the fact that reproduction cost used consistently for the future would endanger the financial integrity of the corporations, even in cases where there has been conservative financing, with no overcapitalization.

Let us keep in mind that we are now at a comparatively high point in the price curve; approximately 60% above 1914 and 130% above 1897. And let us consider that in many instances large investments have been made in public utility properties since the beginning of the war and during the high prices. In many cases the great bulk of the properties have been developed during this period. But even where the properties extend far back, a large proportion of the investments represent the rapid expansion during the past ten years. In all such cases the reproduction cost basis could not be used consistently for future rate making in the face of a long period of falling prices, because a large proportion of the investment was made in most cases through the issuance of bonds with a fixed rate of interest. Strict adherence to reproduction cost over a long period of falling prices would bring insolvency and financial collapse, for the return on the diminishing valuation would not be sufficient to pay the interest on the fixed amount of bonds outstanding.

The issuance of bonds has been based in practically all cases during recent years upon the actual investment in additions and improvements. After large amounts of bonds have been issued with a fixed money return to the bondholders, and if subsequently with a substantial reduction in prices the rates paid by the consumers were based consistently upon the reproduction cost of the properties, the return allowed to the companies would not be adequate to pay the fixed interest obligations. Insolvency would inevitably follow.

To make clear the disastrous financial effect of falling prices if reproduction cost were definitely adopted as the basis of future rate making, let us take the case of a property developed in recent years with present actual investment of $50,000,000, represented by $40,000,000 in 6% long term bonds and by $10,000,000 in capital stock with an implied dividend rate of 8%. The annual fixed interest is thus $2,400,000, and the dividend $800,000, or a total required return of $3,200,000 a year. This is an average rate of return of 6.4% on the total investment.

Now assume a gradual decline in prices, amounting to 50% in 30 years. Then the same properties which at the high price level prevailing at the time of construction had required an investment of $50,000,000, would be appraised at a strict reproduction cost of only $25,000,000. If the original average rate of 6.4% were allowed, the return would be only $1,600,000 a year, or $800,000 less than the annual interest requirements, with nothing for the capital stock representing an original investment of $10,000,000. Of course, the company would be hopelessly insolvent and would have to be reorganized on the basis of the lower money return. The stock owners would be completely wiped out, and the par amount of the bonds would have to be reduced by one-third to come within the return allowed to the company.

This illustration represents the situation of all companies which have installed large amounts of property since the beginning of the war through the issuance of bonds. If we should experience a long period of falling prices as followed the Civil War from 1866 to 1897, and if rates were to be based throughout upon reproduction cost, the companies would soon get into financial trouble. Comparatively few, if any, could survive a decline of 50% in the valuation. Each year would bring a larger number of receiverships; in some cases there would be two or more successive reorganizations; even the strongest companies would be struggling to meet their fixed charges. There would be financial chaos in the entire utility field, with the result of disorganized service and standstill as to improvements and developments of the industries. And who can predict that there will not be a 50% decrease within 30 years just as occurred during a corresponding period after the Civil War?

But all this means simply that reproduction cost would not work as a basis of return during a long period of falling prices. As financial pressure increased, the objections to a rigid adherence to the principle would become stronger and more insistent. Finally, with the threatened general disaster to the companies' finances, reproduction cost would be abandoned and actual investment would have to be recognized as the necessary basis of return. The companies themselves would inevitably shift to the investment basis on the grounds of alleged justice.

If, then, reproduction cost cannot be employed at all during falling prices, and only in a very cumbersome and unwieldy fashion during rising prices, why not abandon it altogether and adopt definitely actual investment as the future basis of rate making?

6. Factors of Uncertainty in Future Price Level

Let us frankly face the fact that we are in a time of great financial uncertainty, subject to extreme fluctuations, difficult to predict, and impossible of deliberate control. As this is being written, the first efforts at the installation of the Dawes plan are being made in the midst of agitation and discussion of settlement of interallied debts. For the time being large gold movements are starting for Europe, and who knows their ultimate extent and their influence on prices? The world's currencies are in an unprecedented chaos at a period when the economic forces for international commerce and finance are stronger than any time in history. What effect will the inevitable general currency rehabilitation have on American prices? We are facing an era of apparently tremendous construction and reconstruction of industrial plant and equipment, including fundamental utilities of power and transportation. What influence of this force upon prices? There have been marked decreases in world gold production in recent years, although during the immediate past year (1924) there seems to have been an increase. What influence on prices? What effect of improved and centralized banking facilities?

True, during the past fifteen years there has been increasing consideration of general currency stabilization with the purpose of preventing wide price fluctuations. The new Federal Reserve System doubtless has considerable power of control over the credit element in price movements, and probably has prevented more extreme shifts than would otherwise have occurred after the war. Ultimately there will be more systematic currency control, including credit, and consequently a reduction if not elimination of extended price fluctuations. But for a period of at least thirty years, we can expect no great result from voluntary control and must frankly expect no better experience as to price movements than in the past, particularly after the Civil War, or after any period of extreme financial disorganization. Let us realize, moreover, that the disorganization and financial disaster have been more extreme and far reaching than ever before, at a time when all countries are more affected by world wide conditions and forces.

7. Problem Concerns Existing Properties

Facing these realities, we cannot escape the conclusion that for effective regulation we must have an unvarying rate base. There can be no doubt that so far as future improvements and additions are concerned, actual investment should be taken as the basis of return. This would not only provide a fixed and non-fluctuating rate base, but would insure the utilities against the grave financial risks of declining prices.

If, then, we realize the desirability and necessity of establishing a rigid future rate base for all the properties, we must decide upon what basis existing properties should be appraised to determine the initial amount. Actual investment can be used readily and justly for all subsequent additions and improvements. The problem is to adopt a reasonable and just basis of valuation of existing properties as the initial rate base, which would remain unchanged for the future, whatever the fluctuation in price level, and would be increased only with actual additional investment.

The problem for consideration, therefore, is, whether for the determination of such initial rate base, the existing properties should be appraised at reproduction cost or at their actual investment. We believe that actual investment should be used, but the problem is not simple and reasonable adjustments should be made.

8. Present Price Level Comparatively High

First, we must recognize, as shown by the price curve, that we are now, with the exception of the post war peak, at the highest point of prices since 1868, and that under our proposal a valuation at reproduction cost would permanently fix as a basis of return the present high level of prices.

While no one can foretell with confidence what the future course will be, whether we are now facing a period of falling or rising prices, we do know that we are on a comparatively high level, so that we must ask whether a valuation based on this high point, would be fair and just to the public. Can we reasonably ask the public to pay a return permanently for the future on the present reproduction cost of the existing properties? Keeping in mind that we are on a high price level and remembering that after the Civil War there was a long period of declining prices, would we be justified in capitalizing against the public through a rigid nonvarying rate base the present reproduction cost of the properties?

If, of course, prices should resume immediately an upward swing, the appraisal at present reproduction might prove to be reasonable enough to the public. But if the course is downward, then the injustice would be severe, and the results burdensome. In this event, there would be growing dissatisfaction as prices declined and, ultimately, political pressure would be practically irresistible to undo the job which was with difficulty accomplished. The public would hardly endure paying permanently a return upon a valuation made at a high point after the prices had receded to a much lower level.

It may be asked, what assurance do we have that the public would support present valuations based on actual investment if prices were to decline? Would not the consumers object to paying a return on properties acquired at a high cost when the same facilities could be duplicated at a much lower cost?

While no one could, of course, underwrite positively any scheme of valuation, it is nevertheless fairly certain that an appraisal based throughout on actual investment would arouse no great resentment in the future even if prices were to fall appreciably. For under the proposal all past investments would be entered in the rate base at cost, whether they were made during the past decade at high prices or in previous decades at lower ranges. The net capital charge would therefore demand only fair average rates. But if the appraisals were now based upon reproduction cost, including properties acquired at lower prices, it would be too much to expect the public to support the high valuations through a downward swing of prices.

9. Actual Cost Is Weighted Average

With the great increase in prices since the beginning of the war and with the probable instability of the future level, appraisal of existing properties on the basis of original cost furnishes the best and most satisfactory average price for the properties.

Most of the supporters of the reproduction cost do not hold to the very peak of high prices, but urge "normal" reproduction cost, with the vague view of eliminating the extreme points and establishing some sort of average or normal figure. Without presenting again the indefiniteness or unreliability of "normal," we should point out that in view of the long course of price changes, appraisal at actual cost of the properties would supply the best "normal" reproduction cost by recognizing the prevailing prices all along the curve as the properties were installed. This furnishes not a low figure based on assumed low prices, but a normal figure based upon average prices prevailing as the properties were developed.

Valuation upon the original cost basis of the properties involves an appraisal of the various units, according to the prices at which they were installed, covering the entire period of the development of the properties. This means that the low prices of the 1890's are recognized for the properties acquired during those years. The somewhat higher prices of the preceding or the following decade are included in the proportion of their actual outlay in the present properties. But it should also be clear that the capital expenditures made since the beginning of the war and during the peak prices, will also be recognized, and will not be written down because of the recession in prices since 1920. All actual costs of present facilities would be considered wherever incurred in the price curve applicable to the particular case. The result would be the most satisfactory normal cost. It would be a weighted average, based upon the relative amount of construction now in existence at the various prices, including the downward swing prior to 1897 and the long upward movement since, also the sharp drop after 1920.

In the determination of the actual cost of the existing properties, the fact should be especially noted that in most cases a larger proportion of the installation took place since the beginning of the war than during any corresponding prior length of time. This is due not only to the large extensions and improvements made during the past ten years, but also to the renewals and reconstruction at the high prices, and to the retirements of property installed during the earlier periods. On the average, therefore, the high prices of the past ten years, would count much heavier than the more moderate costs of the preceding decade, and then the latter again would count relatively much more than the low costs of the prior decade. Altogether, the original cost of all existing properties would give sufficient weight to the high level of prices, especially to the installation at the peak, to make the net result a reasonable figure to be used as a permanent rate base. This would place no unjust burden upon the public in case of future falling prices, and it would sustain the actual cost of financing.

10. Investors Expect Return on Unchanging Base

Another important point to be taken into account is the expectation of the investors. Since the policies of regulation were not closely defined, we cannot assume with definiteness that the investors had expectations which would amount to a condition or an implied contract more or less binding upon the public. However, investments are almost invariably made with consideration principally to the immediate amount of money or equivalent that is devoted to an enterprise. With perhaps negligible exceptions, investors never place their money in an enterprise, or purchase securities, except as they think of the return that they are to get upon the immediate amount expended, not upon a lesser or greater amount according to prospective changes in price levels.

It is true that in recent years investors have come to recognize more clearly the significance of price changes. This factor probably has come to be considered somewhat in the launching of enterprise. But for the most part even now, after our experience during the past ten years with extreme fluctuations, investors are purchasing stocks and bonds or are devoting moneys to business without much thought of the probability of changes in price levels. Corporations are issuing bonds by the millions without special fear as to what might happen to their ability to pay the fixed interest in the face of gradually declining prices. Even now investors think almost solely in terms of money and only incidentally of the effect of subsequent changes in price levels. It is therefore difficult to see how investors would be particularly mistreated if the return allowed approximated substantially their original expectations of return based upon actual investment.

11. UTILITY INVESTORS EXPECTED LIMITED RETURN

The factor of the investors' expectations has particular significance when we consider that ever since *Munn v. Illinois* there have been limitations upon the returns to be realized. The public interest was definitely recognized so that the charge for service could be limited accordingly. To be sure, the interest was never clearly defined; but the limitations have continued throughout. At every step additional investments have been subject to the public interest and the right to regulate. This relation from one point of view has represented a partnership between the public and the private investors who devoted their money to the enterprise. This partnership could proceed reasonably only on an investment basis, and the whole relationship could be satisfactorily maintained only according to cost.

From a somewhat different standpoint, as previously indicated, the public interest can be viewed as a relationship of principal and agent, where the public interest is considered paramount; the public is the principal and the corporation is merely the agency furnishing the service which otherwise the principal would be compelled to provide directly for itself. This is the so-called agency theory which has received extensive consideration by a number of writers who support the actual investment basis. Again, our belief is that this theory is technical and can be easily exaggerated out of its true proportions. As a matter of fact, it has never been definitely established. It applies only as it coincides with the public interest that was recognized in *Munn v. Illinois.* But it does indicate the character of the limitations which have existed against the public utility investments.

In addition to the general limitations applicable to all utilities, some statutes specifically state that the commissions shall fix rates that will allow a fair return upon actual investment in the properties. This has been the case, for instance, in New York State.[3] True, even in these cases no explicit policy of regulation has been enacted. Nevertheless, is not the language sufficiently plain as a clear limitation which should be recognized in the determination of a rate base for future purposes?

12. MOST INVESTORS CONTRACTED FOR LIMITED RETURN

The principal argument in favor of reproduction cost is that it would provide practically a direct adjustment of the investment to the change in price level, particularly increasing the money return to offset the lower purchasing power. Assume that the actual investment in a given property amounts to $50,000,000 made gradually over the past 30 years, and that the present range of prices is 50% above the average as the investments were made. Consequently, if the purchasing power of the return allowed is not to be diminished through the higher prices, the investment should be adjusted to the 50% increase, so that the return would be based on $75,000,000 instead of the actual cash investment in the properties.

The argument for reproduction cost is that it provides an adjustment of the cash investment to changing price level so that the return would maintain practically a level purchasing power. There is no doubt that as a matter of economic and financial analysis it would now provide a rough compensation to investors for the loss in purchasing power in the course of rising prices.

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[3] See above, Chapter III, Sec. 2.

But against this plausible analysis, the fact must not be overlooked that a large proportion, if not the bulk of the investments, have been made under contractual limitations which recognize actual investment as the basis of return, whatever the changes in price level. They have been made through the issuance of bonds which represent a definite contract, wherein the holders are entitled to a fixed and unvarying sum of money based on the face value of the bonds without regard to changes in prices. The same condition prevails in the case of preferred stock, which, however, forms but a small percentage of the capitalization.

While no effort will be made here to present a conclusive statistical analysis of the relative actual investment in utility properties represented by bonds as compared with capital stock, our belief is that at least three-fourths of the investment has been made through bonds. With some exceptions, these bonds have been issued upon actual investment and the returns are fixed by a definite rate of interest on the face value of the bonds. What reason, then, is there to urge that the valuation of all of the properties should be based upon reproduction cost when the bulk of the investments are not subject to such price adjustment?

It is, of course, impossible to determine with any high degree of certainty in what proportion actual investments have been made in public utilities through stocks and bonds. From long personal contact with valuations and capitalization cases I believe that, on the average, fully 75% of the actual moneys expended in properties through security issues have come from bonds and only 25% from stock. But for our purpose, even a 50-50% division would support our analysis.

However, we may present some illustrative figures. Let us take the capital flotations covering public utilities in the United States.[4] For the calendar year 1923, total debt, bonds and notes, was stated at $637,533,671, and total new stock $250,457,058. This is a proportion of about 72% debt and 28% stock. For the five years 1919-1923, the corresponding amounts of new issues were $2,033,464,162 bonds and notes, and $733,879,818 stock; a proportion of 73% debt and 27% stock. For railroads, new capital flotations for 1923 were: bonds and notes $437,194,000, and stocks $27,322,450, thus the debt forming 94% of the total; while for the five year period 1919-1923, the corresponding figures were $3,759,714,262 and $788,170,368 or 97% and 3% respectively. For all utilities, including railroads, the debt for 1923 is 79%, and for the five years 83% of the total new capital issues.

Upon analysis it would doubtless appear that the larger percentage of the relatively small portion of stock issued by utilities in contrast to railroads, is due to the extension of utility control by stock issues, often representing duplication and not additional investment, where the stock of one company is exchanged for that of another in the rapid holding company development of that period. The force has been particularly active in electric utilities, but negligible in railroads. Moreover, analysis would show that new actual investment through stock has come more heavily from preferred stock, which has been issued in the so-called "consumer-ownership" campaign and has been offered also to general investors more extensively than common stock. It should be observed, then, that all preferred stock investments, bear exactly the same relation in our discussion as do bonds and notes, obtaining a definite contractual return. Mostly, however, for simplification the preferred stock element will be disregarded in our analysis.

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[4] *Commercial and Financial Chronicle*, January 26, 1924.

In all the vast amount of discussion favoring the reproduction basis of valuation, there has never been a proposal suggesting even remotely that any adjustment should be made in the return allowed to bondholders or preferred stock. The argument has proceeded throughout from the standpoint of making the higher valuation on all of the properties employed in the public service, whether the funds were provided through the issue of securities with a fixed return or through the issue of common stock. Such an adjustment, it is clear, would result in giving the benefit of the full increase on the entire investment to the common stockholders and none to the others who had furnished the bulk of the moneys.

Since the reproduction cost basis has been urged in recent years principally as a matter of justice to the investors, in order to compensate them for the loss in purchasing power of a fixed return, it would be utterly unreasonable to allow an increase on all the properties when, as a matter of fact, the bulk of the investors would get no benefit. The most that could be expected would be compensation to stockholders who were not given a fixed return and who did undertake considerable risk in the business. But it would be idle, on the ground of assumed justice, to allow an advance on the bondholders' investment and give the benefit to the stockholders in addition to an increase in their own investment.

The significance of this point can be made clearer by illustration. Assume a property whose total original cost amounts to $50,000,000, contributed 75% or $37,500,000 by 6% bonds and 25% or only $12,500,000 by capital stock. Assume, moreover, that an average 50% increase in price level has taken place since the time of the installation. A full adjustment, therefore, on the entire property for the rise in prices would amount to 50% on $50,000,000, or an increase of $25,000,000. But, because of their contractual relations, the bondholders would still be held to their 6% on $37,500,000 contributed by them. Consequently, the full $25,000,000 adjustment on the entire property would go to the benefit of the stockholders who contributed only $12,500,000 and who would thus get 200% increase in the valuation on which they would obtain a return compared with the 50% increase in price level. Such a result is obviously absurd and cannot be seriously urged on the ground of justice. And this illustration is representative of a large proportion of the properties.

13. Possible Adjustment for Stockholders

The bondholders' relation to the properties receiving a fixed and limited annual income illustrates clearly the expectation of the investors. For the most part, as stated before, they think in terms of actual money devoted to the enterprise and hardly ever consider the consequences of material shifts in price level. The same disregard at the time of investment to the probable change in prices applies to all forms of investment. Moreover, the stockholders in the public utilities assume the limitations upon public utility investments. The fair conclusion, therefore, is that, all facts considered, there is no overwhelming reason why they should be treated differently from bondholders.

The fact, nevertheless, should be squarely faced that while the bondholders have deliberately and definitely accepted a limited return, the stockholders did not assume any such direct fixed conditions. They did undertake certain risks and they did provide special protection for the bondholders. While they devoted their moneys to the enterprise with the limitations of a regulated return, the conditions and terms of the investments were never clearly prescribed. While presumably they might have been limited to a definite and fixed return, this was not explicitly stated in any of the laws of the country.

For these reasons, at least some adjustment may be made on the stockholders' investment. This, however, should be strictly limited to the stockholders, and not allowed on the properties financed through the issue of bonds. The practical procedure in such an adjustment would be, first, to make a determination of the net investment equal to the original cost of the properties less depreciation. From this amount would be deducted the face value of the various bonds outstanding. The balance would represent the net original investment made by the stockholders. Then the time of the issuance of the stock can usually be accurately determined from the corporate records, and the change in general price levels could be approximately ascertained through standard price curves. Then the original stockholders' investment would be increased by the percentage by which general prices have risen since the time of the issuance of the stock. By this adjustment the stockholders would be fully compensated for the change in price levels and the decrease in the purchasing power of money.

It should be noted, however, that in most cases even this adjustment would not achieve exact justice. In any case the stock is all of the same kind although it is usually issued in lots at various intervals. Each successive issue would be adjusted according to the price changes since its particular date of issue, but in the actual dividend distribution all would receive the same rate. Consequently some would receive less than the full adjustment to which they would be equitably entitled and others would receive more.

Suppose a company has 100,000 shares of common stock outstanding which have been issued in four equal installments at ten year intervals. Then, of course, we would adjust the four portions on various bases, because present prices bear a different relation to the levels at the time each portion was issued. But it is evident that no varying rates of dividends could be allocated to the different groups; and in any event their identities are now merged in the entire issue, and, besides, the stocks have been changing hands all these years, at prices that bear no special relation to the actual investment in the properties. Thus, the resultant adjustment would be in some cases higher than warranted for the particular stockholders and in others lower. Under no possible arrangement could we obtain an exact equalization for individual stockholders. But the proposed adjustment would provide for the stockholders as a whole reasonable compensation for the loss in purchasing power of their return.

14. ADJUSTMENT TO HAVE MINOR EFFECT

Such an adjustment as here suggested would not only be reasonable, but in most cases would not seriously affect the valuation. On the average, probably not over 25% of the investments have been provided by stockholders. On this basis, a full adjustment for the change in price level allowed to the stockholders would affect the total valuation only to a minor extent. Assuming a 25% stockholders' investment and a 50% increase in prices, this would mean an adjustment of only 12½% upon the total cost of the properties. In our illustration of $50,000,000 actual investment, we should have a total adjustment of only $6,250,000 or a total valuation of $56,250,000. In many important instances, the stockholders' percentage of the investment would be smaller, and the effect on the total valuation would be correspondingly less. There are cases, however, where the adjustment would be substantial because the stockholders' investment is relatively high.

If such an adjustment as here suggested were attempted, perhaps further attention should be directed to the probability of future price decreases. In view of the fact that we are now on a relatively high level of prices, and that whatever adjustments are made would remain permanently fixed in the valuation, it might be reasonable to allow only 50% of a full adjustment. If this were to be made permanent as a basis of return for the stockholders, even against a long period of decreasing prices, there should not be much ground for complaint. But the degree of adjustment granted to stockholders would be a matter of policy, subject to the discretion of the public authorities.

15. A DEFINITE REPRODUCTION COST FACTOR

The suggested adjustment for stockholders' investment rests entirely on its assumed reasonableness and justice. The stockholders did undertake risks in the business and did not subscribe to any definitely limited return similar to the bondholders. While they were always subject to a yield earned under reasonable rates, the restriction was never closely defined as here proposed and was hardly contemplated within the conception of great price changes. Fair treatment seems, therefore, to call for adjustment in the stockholders' investment if we now propose to fix a definite and unvarying rate base for the future.

The suggested adjustment, however, would serve also to meet whatever special legal requirement there may be to give weight to the "reproduction cost" factor. The Supreme Court has squarely declared that "The refusal of the commission and of the lower court to hold that for rate-making purposes, the physical properties of a utility must be valued at the replacement cost less depreciation was clearly correct." And, as shown in a previous chapter, the Court would probably not invalidate given rates which furnished a 6% or 7% return on actual investment even if it failed to yield 4% or 5% on the reproduction cost. It seems to recognize a fair return on actual investment as the ultimate measure of confiscation. Nevertheless, the majority of the Court seems to believe that in reason some substantial allowance should be made for the higher price level and in a closely contested case might actually require such provision. Our suggestion, therefore, meets the natural feeling of justice that compensation should be made for higher prices, but places a definite and determinable limit to the adjustment. It meets in a practical way the reasonable element in the reproduction cost theory, and would doubtless be approved by the Court if properly presented in a given case. It would give us a just starting point for determining and maintaining an exact rate base for the future.

Full reproduction cost has really never been regarded favorably by any court, but the feeling that some weight should be given to present high level of prices has been frequently expressed and, as previously stated, is doubtless favored also by the majority of the Supreme Court. But with this conception, if full reproduction cost is not to be allowed, how shall the relative weight given to it be determined? This has been utterly indeterminable. There has been no way to establish whether a 75% or a 10% weight should be allowed compared with actual cost. In the Southwestern Bell case, where the Supreme Court talked most vigorously in support of reproduction cost, it added only 25% on the actual investment although the reproduction cost was then probably more nearly 100% above the investment; and there was no explanation how the 25% increase was established; it was just taken out of the air without any support of principle, theory or fact.

The proposed adjustment to stockholders' investment is not offered primarily as a basis of establishing definitely any reproduction cost factor, but its consequence would be to provide a measure if the matter must be regarded as giving "weight" to an element in reaching "fair value." It would provide a definite approach in any case to the percentage allowance for reproduction cost, without floundering between widely separated and unsupported ratios.

16. REPRODUCTION VALUATION INVITES INFLATION

Among the difficulties of valuations on the reproduction cost basis are various unjustifiable claims or applications of the theory. These, however, should be frankly recognized as unnecessary distortions. Nevertheless, it is true that the absurd claims made in practical appraisals emerge more readily when reproduction cost is adopted as the basis than when actual cost is used. The theory lends itself easily to various hypothetical and fanciful applications in the hands of valuation experts financially interested in forcing the results to the maximum limits.

Among these claims are such items as the cost of paving over the mains in the case of gas and electric properties when, as a matter of fact, the company made no such investment and the paving was paid for entirely by the municipality. In such a case the actual investment basis would automatically eliminate the item, while the reproduction cost theory does invite a claim which has no basis in reality. It would be palpably absurd to allow a utility a return on a sum which does not represent any investment on its part.

The same consideration applies to every condition where present reproduction of the properties would involve expenditures which were never incurred. On the other hand, a correspondingly rigorous application of reproduction cost would eliminate items which did represent substantial costs to the company in the development of the properties, but would not have to be incurred now under existing conditions. For example, in the actual development of a street railway, a great deal of excavation and grading were necessary because of the contour of the then existing territory. Now, however, on the basis of reproduction cost under present conditions, the streets are level, no such work would be required and nothing would be allowed for it in the valuation. In such cases, however, the supporters of the theory do not mind inconsistency and urge that inasmuch as the investment was actually made, the property should be included in the inventory and appraised at the present higher prices. In the practical application of the reproduction cost theory there are inconsistencies which appear in one shape or another over and over again. They are, however, distorted applications, not inherent in the theory itself, but somehow follow in its wake.

Other fanciful applications of the reproduction cost theory appear in the various intangible construction charges, cost of financing and other so-called overheads. In these items there is hardly any limit to which a valuation may not be extended. These will be considered separately in Chapter VIII. Their actual determination is not entirely simple, but the reproduction cost principle invites particularly the flight of fancy and their consequent inflation beyond all reason.

17. Fallacies of Some Actual Cost Theories

Before concluding the discussion of reproduction and actual cost, we may digress slightly to consider some special aspects of the subject advanced from time to time by public or company advocates.

On the public side in support of actual investment, some writers have doubtless overstated their case or have adopted untenable theories. For example, one view is that rate regulation of public utilities is a substitute for the competitive processes in ordinary industry. The idea is that in unregulated enterprises the forces of competition tend to give the public full protection. Where there is such competition, the argument is, the prices charged for service represent approximately the cost of production. In the case of utilities, however, where such competitive factors do not operate, the primary purpose of the commissions should be to fix rates at a point of cost which would be maintained under active competition.

Our view is that this analysis is either not altogether candid, or is based upon a misconception of what actually happens in competitive enterprises. If a constant or unchanging price level were assumed, it is true that in a competitive business the charges for service would in general be determined by the cost of production. But if we take into consideration the force of changing price levels the analysis will not hold.

During a period of price changes, upward or downward, even in competitive industry the charge to consumers tends to the cost of production at the particular time as determined by prevailing prices. This cost includes a return on the investment as represented by the prices at the time and not upon the original cost of the properties as they were installed at higher or lower costs.

It should be clear that in competitive industries when prices rise, the value of the properties employed rise in proportion, and that during falling prices the value of the properties decline, notwithstanding a greater original cost. There is, in other words, a constant adjustment to the prevailing costs and there is not an identity between the cost of reproduction and actual cost. If then we desire to maintain in the utilities prices that obtain in competitive industries, there would be a complete theoretical justification of reproduction cost as the proper basis of return.

The difficulty is, however, of a different sort, and rests upon practical considerations and fundamental policies. The fact is that we cannot regulate in the future if we base rates upon reproduction cost. It is unworkable and will defeat regulation exactly as it has up to the present time. If we wish regulation, we must allow returns to the investors upon a definite basis, eliminating litigation and adjusting rates automatically. Under the circumstances, we believe actual investment is reasonable, but its justification is based upon the facts particularly applicable and not upon invalid economic analyses.

A somewhat different slant of essentially the same idea has been presented by writers on the public side, when they have argued that the thing to be determined in rate making is the "value of the service," which is said to be independent of the "value of the property." But in the argument the fact develops that the "value of the service" is not viewed as anything subjective and intangible, but in reality as the cost of service, and included in the cost is interest or return on the actually necessary investment. With the final result, we thoroughly agree, but reach the same conclusion by the direct assumption and proof that no other basis of effective rate control is possible. We do not attempt to dodge the fact that valuation is necessary by employing vague phraseology, and then indirectly return to exactly the same procedure based upon actual investment. Frank facing of the facts and issues is necessary for the establishment of sound policy.

18. Reproduction Cost of Service

Some reproduction cost advocates shift the issue considerably from the standpoint of our discussion. Instead of basing rates upon present costs including present rate of return on present reproduction cost of the properties actually used, they argue that the rates ought to be fixed according to the cost of the most economical plant and equipment to furnish the necessary service under existing requirements. This policy, it is urged, would give the public the benefit of all available improvements in the industry and would penalize the company for operating with depreciated and partially obsolete property, but would make an automatic adjustment to the investors for changes in price level, up or down. The rates at any stage would represent the cost of service by a new and thoroughly modern property, and under efficient organization and management.

The idea has been developed primarily by engineering writers, and abstractly considered makes a rational appeal. There are, however, two difficulties: administrative and financial. As to the first, rate regulation instead of being lifted upon a basis of scientific certainty, with the rights of the investors and duties of the public clearly determined and maintained, would be smothered worse than at present by vague assertion, hypothetical guess-work, and the clash of private and public interests. Every time a change in rates would be proposed, it would be necessary to redetermine the uncertainties of investment and operation of a plant which does not exist. Effective regulation would be impossible. As to the second difficulty, the problem of investment *vs.* reproduction cost is treated in our discussion from the standpoint of financial justice to investors, with the purpose of establishing effective regulation. But, as a matter of financial adjustment to investors, the particular theory under immediate consideration would not present any systematic protection of the investors, neither providing for thoroughgoing allowance of depreciation in cost of service, nor safeguarding actual investment made. So far, however, as adjustment is made to changing price level, the questions of reasonableness and justice are exactly the same as under our general discussion of reproduction cost *vs.* investment and have been considered in the preceding sections.

19. Cost Elements, Not "Value"

Perhaps underlying these confusions as to fundamentals in the problem of fixing a rate base, is the conception that we are concerned with "present value" as such, to be differentiated from either original cost or reproduction cost. These are regarded merely as factors, but not present value, which is the quantum to be protected by the Constitution.

Once more let us insist that there is neither legal nor economic force in an abstraction of "present value" for rate making purposes except as it is expressed in terms of "costs." In rate regulation we cannot deal with the ordinary conception of value as used generally in business or by economists. It is, of course, a commonplace that in ordinary usage the value of a property is dependent upon earning power, which in turn depends upon the rates charged for service; and thus for rate making purposes would swing into a circle and get nowhere. We must have a definite physical basis of determining valuation for rate making, which must consist either of original cost of existing properties, or the reproduction cost, or some definite combination of physical cost elements, with or without deduction for depreciation. These are determinable categories and can be practically established without reference to rates. But fixing a value which is dependent upon fair rates and simultaneously measuring the fairness of the rates by the value, is obviously legal and economic legerdemain.

20. ADJUSTED INVESTMENT AS "FAIR VALUE"

In concluding our discussion of reproduction cost *vs.* actual investment, let us emphasize once more that our approach to valuation is from the standpoint of establishing a fixed and unvarying rate base for effective regulation in the future. We have emphasized the matter of price levels and price fluctuations to show the necessity of establishing a rigid rate base and for that purpose to make a final valuation of existing properties.

From this clearly defined standpoint, we believe that with the adjustment suggested for stockholders' investment, the only reasonable course is to base the valuation of existing investments on the actual original cost of the properties with a deduction for depreciation. This would be the "fair value" for the investors and would maintain the public interest which was set forth in *Munn v. Illinois* and which should have been carefully preserved through all the intervening period of time.

The taking of a complete inventory of existing properties and appraising them at actual cost, is only the starting point. As indicated throughout this chapter, cognizance must be taken of the condition of the property in order to account in the appraisal for past depreciation. The next chapter will be devoted to this phase of the valuation.

CHAPTER VII

DEPRECIATION

1. Various forms of depreciation. 2. Prevalent depreciation provisions. 3. Accounting procedure. 4. No confiscation involved. 5. Depreciation course illustrated. 6. Depreciation not shown in accounts. 7. Reasonable estimates necessary. 8. Proper life average main consideration. 9. Obsolescence factor important. 10. The depreciation issue. 11. Economic death seldom determinable. 12. Reserve equipment in valuation. 13. Fair valuation of varied properties. 14. Treatment of obsolescence by opponents. 15. Obsolescence not difficult to determine. 16. Special case of obsolescence. 17. Deferred maintenance. 18. Depreciation reserves in valuation. 19. Other reserves in valuation. 20. Future depreciation provision no problem. 21. Depreciation versus renewal charges. 22. Procedure in case of single unit. 23. The same principle for many units. 24. The property as a whole. 25. New and growing or settled properties. 26. Illustration of settled properties. 27. Is a large reserve needed? 28. Depreciation provides comparability. 29. Replacements indistinguishable from additions. 30. Depreciation method assures financial stability. 31. Opponents concerned with valuation. 32. Conclusion.

1. Various Forms of Depreciation

Depreciation in its simplest form represents the wear and tear of plant and equipment used in operation. With the exception of land and property analogous to land, like grading and excavation, all physical units wear out in use and must be replaced sooner or later to maintain the properties.

A comprehensive concept of depreciation, however, embraces all forms of impaired usefulness of property, regardless of its cause. Other factors of depreciation besides wear and tear are obsolescence, inadequacy, and shift in demand for the use of the properties. In a broad sense, all three categories may be included in the term obsolescence, and in our discussion they will be frequently so named.

Obsolescence represents the growing out-of-dateness due to improvements, new designs, invention, etc., which make available better, more suitable and more economical facilities than the ones in service. As such improvements develop, the units of property in service become more and more out-of-date, until at some point it is more economical to replace them with the newer facilities, even though the existing parts are not worn out.

Inadequacy represents a condition which, because of a large increase in demand, renders the existing facilities insufficient or unsuitable for the requirements of service. This may be illustrated in the case of gas mains. Originally two inch mains may have been adequate for the immediate and prospective service. But with rapid growth of population and expansion of the municipality, the two inch mains must be replaced with larger ones, even though they are physically still in first class condition.

A shift in demand closely resembles, or assumes a special form of, inadequacy. The required replacement is not due to growth but to change in the demand from a particular service to a substitute that cannot be provided by the existing facilities. For illustration, there is now throughout the country rapidly growing competition by motor bus lines with existing electric street railways. One of the factors of the competition is, of course, the relative cost of service. But even at the same rates of fare a large number of people prefer to ride in buses, due to their more rapid operation and the greater flexibility of the service. This shift in demand for a substitute service is an important cause of depreciation among electric railway properties. The same factor appears among other utilities, but usually applies to special kinds of property and not to a utility as a whole.

Depreciation, according to our view, comprehends all factors which are connected with the expiration of the economic life of plant and equipment used in operation.[1] It is an important cost element in business. On the side of operation, it is the portion of expired property, or capital cost, which belongs to operating expenses or cost of output during a stated period of time. From the standpoint of capital investment, it constitutes at any point of time the portion of the original cost of existing plant and equipment whose economic life has expired and has been or should have been included in the past cost of production or service. It represents the aggregate distribution of original capital expenditures to the operating accounts during the past economic life of the different units of property.

2. Prevalent Depreciation Provisions

Depreciation involves not only the problem of valuation, to determine the future rate base for existing properties, but also the question of how depreciation of plant and equipment shall be charged to the operating expenses in determining rates for service.

Under the Interstate Commerce Commission classification of accounts for steam railroads as well as under the uniform systems prescribed by a large number of regulatory bodies of the various states for local utilities, the prevailing provisions for depreciation involve the following two requirements:

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[1] The terms "economic life" and "service life," as employed frequently in this chapter, signify the period during which a unit of property is used more efficiently than any substitute. This means more specifically that its use results in a lower cost per unit output than the use of any substitute facility.

> (1) In addition to actual repairs and minor replacements of property, charges to operating expenses for the estimated amounts of property worn out in service or otherwise rendered unsuitable for use.
>
> (2) To correspond with the preceding depreciation charges, the creation of a depreciation reserve, against which is charged the original cost of all property retired from service.

The depreciation charges to operating expenses represent the part of the property costs which properly belong to the year's cost of operation, while the depreciation reserve shows the total of all such past charges made in connection with the existing property in service. The periodical charges are credited or added to the reserve, while the cost of plant and equipment retired is debited to or deducted from the reserve.

Systematic provision for depreciation is primarily a matter of cost accounting in reference to expenditures which are not directly chargeable to operation or output of the business. An expenditure for property involves an outlay which is entered as a capital charge but is gradually transferred to operating costs as the economic life of the property disappears in service.

For example, the cost of a street railway car is $5,000 and is charged to the appropriate capital account; but subsequently $250 is charged annually to operating expenses during the twenty years the car is expected to be in service, and the charge to capital account is diminished accordingly.[2] The ultimate purpose of this accounting is to determine the cost of the service or product as compared with the amounts realized from the sale, and thus to show the final profitableness of the business. This accounting is conveniently subdivided by periods which for our purpose is assumed to be a year.

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[2] We shall have in mind throughout in this discussion the "straight line" method of depreciation because of its simplicity and because it represents the facts with sufficient accuracy. Even with the greatest precision, depreciation estimates either for present valuation or for future operating purposes involve substantial margins of uncertainty

From the standpoint just presented a so-called capital charge, or investment in property, represents merely an expenditure which is to be included in successive periods in the cost of operation. During the life of such property, its original cost is gradually charged off to the cost of operation or production on the basis of relative periodical use. At the expiration of its useful life, the full cost has thus been conveyed from the original capital charge to the operating costs

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so that complicated and refined methods of computation are not justified. The straight line method apportions the original capital cost to operating expenses on the basis of equal annual sums during the estimated life of the property. On fundamental economic grounds the correct basis of charges is the so-called "sinking fund" method, under which the total charges to operating expenses increase gradually year by year in accordance with the assumed interest return on the accumulated reserve fund provided for the ultimate retirement of the property. It starts with a certain depreciation charge for the first year, and the accumulation of a corresponding fund. For the second year, the depreciation is increased by the interest accrued on the fund during that year. At that point the fund is equal to the two charges, plus interest for the one year. For the next year, the charge is equal to the original charge, plus the interest of the fund during that year, etc. In this way, the gross charge to operation increases with the growth of interest on the fund, but the net charge paid directly by the consumers remains constant during the life of the property. The method results in writing off to operation annually increasing capital costs during the life of the property instead of equal amounts under the straight line method. If we assume unchanging prices, interest rate, and productivity during the life of the unit, the undepreciated cost under the sinking fund method is equal at any point to the discounted value of the net returns still to be obtained from the operation of the unit during its remaining life. This conforms theoretically to the economic value of the unit under the assumptions. But the method is too complicated and is not justified by the results of the assumed refinement. This method of charging operating expenses and crediting the reserve may be used even if no separate depreciation funds are accumulated and the reserve is invested in physical properties used in operation.

There are other bases of computing depreciation, but they are beyond the scope of our discussion.

included with other operating charges to determine the total cost of the product.

This process applies to all renewable plant and equipment, but not to land and to other permanent items which do not require future renewal or replacement. Land, once purchased, stands permanently in the accounts without depreciation. It serves indefinitely, and there is no diminution in the capital charge for expired usefulness. Consequently the original cost remains unaltered and there is no charge to operating costs for depreciation.

It should be clear that if depreciation is provided through operation as here outlined, the full original investment in the property is permanently maintained. As a part of the original cost is charged to operation or the cost of service in the form of depreciation, there is an automatic decrease in the net income available as return on investment and a corresponding sum is locked up among the assets of the corporation. Consequently, at the close of any period the original cost of plant and equipment, less the amount of depreciation charged off to past operation, plus the funds reserved out of operation for such depreciation, is equal to the full original investment in the properties. Thus an investment in property once made will be maintained automatically through the depreciation arrangement.[3]

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[3] The discussion throughout this chapter implies the basing of depreciation charges upon the actual original cost of the renewable units of property. This is theoretically sound on the assumption of unchanging prices, where the range of renewal costs is the same as the original cost of the property to be replaced. It is not correct, however, in the face of shifting price level. The ultimate purpose of maintenance, including the depreciation charges, is to maintain the physical properties and their relative productive capacity, whether prices remain level or shift. Consequently, during a long swing of rising prices, the cash cost of renewals to maintain the relative productivity of the plant will increase and should be provided for through corresponding higher depreciation charges. The reverse is true during falling prices. But with the constant fluctuation in price level and the uncertainty at any

3. Accounting Procedure

If the cost system is systematically maintained on the basis here presented, all expenditures for property are charged in the first instance to the appropriate capital accounts. Then, as operation proceeds, the proportionate part of such original cost which belongs to the particular period is charged to operating expenses or cost of operation, and simultaneously the amount is credited to a depreciation reserve. This credit indicates a deduction from the original capital charge, recording the transfer in the cost accounting from the capital to the operating account.

The credit might be entered directly in the particular property or capital account affected. The better policy, however, is to maintain a separate account for such credits, which would show an accumulation of all capital charges that have been written off and conveyed to the cost of operation. This is the depreciation reserve, which at any point of time shows the total amount of depreciation charges to past operation on account of property still left in service. It represents the amount of the original cost of all such properties that has been included in the past cost of operation. The property or capital accounts show the full original cost of such properties. The difference between the sum of the original costs in the several property ac-

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point of what the future changes will be, it is impossible to provide systematically for the shifting renewal requirements. The best policy, therefore, is to base depreciation upon original cost of the renewable properties, and then, among other revisions of estimates in the course of operation, reasonable adjustments can also be made for rising or falling renewal costs. The point, however, should be clear that with the initial valuations once determined and a systematic rate base definitely fixed as proposed, all reasonable and desirable depreciation adjustments can be made, without affecting the rate base and without arousing a conflict of interest between investors and consumers. Any reserve accumulated for depreciation, or excess renewal cost, would be limited to its purpose and would not be used directly or indirectly as an addition to the rate base.

counts, and the amount of the depreciation reserve, shows the amount of the total original cost which remains chargeable to future operation in reference to properties existing at the particular time.

When any unit of plant or equipment is abandoned, either because of wear and tear or obsolescence, the original cost is then credited to or deducted from the appropriate capital account, and concurrently debited to or deducted from the amount of the depreciation reserve. In this way all retired property is eliminated from the accounts. Consequently, at any point of time the capital accounts represent only the properties remaining in service, while the depreciation reserve represents the amount of the original cost of such properties which has been allocated to past operation.

The precise accounting methods may be varied slightly from the above summary, but the results are practically the same by the various ways of treatment. The summary presents the more generally accepted procedure, which must be kept clearly in mind to avoid confusion in the subject under discussion.[4] The records provide the essential facts and preserve the investment.

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[4] There is, of course, considerable diversity in the depreciation provisions in the classifications prescribed by state commissions and the Interstate Commerce Commission. The latter sets forth a distinct depreciation account in operating expenses for each class of equipment, the charges to be based upon the expected life of the particular equipment owned, and providing a still further account for any undepreciated balance when the full original cost has not been charged off prior to the retirement. But it has not provided similar depreciation accounts for road and track items, permitting the companies to charge renewal costs to operating expenses. As this is being written, however, it has under contemplation the advisability of extending the strict depreciation requirements to all renewable property. The state commissions have mostly provided only a single account for depreciation charges, covering all classes of properties or have distinguished only as to very broad groupings such as "way and structures" and "equipment" in the case of electric railways. Moreover, the companies are free to a large extent to fix their own depreciation rules, which may or may not correspond to the facts of depreciation, and do not control the depreciation allowance in rate cases.

4. No Confiscation Involved

Where such cost accounting has been consistently followed, the accounts will show the amount of the net investment that has been maintained in the properties for the public service. As stated above, the property accounts will show the original cost of all the properties used in the public service, while the depreciation reserve will show the amount of such cost that has been charged off to past operation. The difference represents the net investment in properties applicable to future operation.

It should be clear that the deduction of the depreciation reserve from the original cost of the properties does not represent, as is frequently claimed by opponents of the depreciation idea, a confiscation of investment. If the cost accounting process has been consistently carried out, every charge to operating expenses for depreciation and every credit to the reserve has resulted in the retention in the business of a corresponding amount of current revenue, which otherwise would have been shown as profits. The very charge for depreciation has resulted in the first instance in an identical increase in the operating costs, which in turn has caused a corresponding decrease in the net profits shown for the period of operation. There has thus been retained in the business a fund to correspond with the amount of the depreciation charged to the operating costs, equal altogether to the accumulated amount of the depreciation reserve.

The assets thus retained in the business from the current revenues are set aside in some cases in a special depreciation fund safely invested in outside securities and used only as needed for actual renewals and replacements of any existing units of plant and equipment. Where this mode of financial management exists, the original investment would consist of the sum of the original cost shown in the property accounts, less the reserve for depreciation, plus the amount of the depreciation funds specially invested. In such a case the income from the special depreciation funds would be added to the income account of the company and the total would constitute the return on the investment.

For the most part, however, no such separate depreciation funds in outside investments are maintained. The usual method is to merge the money retained in the business through the depreciation charges with the other cash in the business. This is then employed for any purpose of the corporation. It is, however, usually expended for additions and improvements in the property which otherwise would require the issuance of new securities. Thus the funds representing in the first instance depreciation, appear as additions to the property accounts. The total cost of the properties, therefore, includes the investment of the depreciation funds. Consequently, to determine the original investment we would include all of the total cost shown in the property accounts, less the amount of the depreciation reserve. This is the usual situation, so that the original cost of the properties less depreciation shows automatically the original investment.[5]

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[5] Usually the depreciation funds, as distinguished from reserve or charges, are thought of as applicable for specific renewals as property is retired; if such funds are expended for so-called additions and improvements, then when any renewals are made they are thought as properly financed out of new security issues; the conception is that the depreciation funds are restored by the security issues and are again made available for their primary purpose. Clear reasoning and sound principle, however, requires no such technical distinction. For the most part it is better policy to devote the depreciation funds to any capital needs without distinction as to additions or renewals. The depreciation charges as made to operating expenses represent the wear and other property impairment. Consequently the funds retained in the business through the charges constitute the real capital renewals for the year and have preserved the investment. There is then no further principle

Thus the claim that there is confiscation if the depreciation reserve is deducted from the full cost of the properties, is based upon a misconception of the financial relationship involved. There can be no confiscation produced by the described accounting process even if the charges for depreciation are grossly excessive. However excessive they may be, they lock up automatically a corresponding amount of assets in the business derived from current revenues. Consequently, the investment remains intact; it cannot be thus confiscated, if the rates are sufficient to pay the cost of operation, including the charge for depreciation and the return on the investment.

5. Depreciation Course Illustrated

The relationship just explained between the property accounts, depreciation reserves and the investment of depreciation funds, may be made more clear by a simple representation of a balance sheet of a company. Assume a new property in existence on January 1, 1910, with a total cost of all the properties in service amounting to $10,000,000. Assume further that $6,000,000 was contributed by the issuance of bonds and $4,000,000 through the issuance of capital stock. The balance sheet appears on the next page.

The balance sheet thus shows on the assets side, properties $10,000,000; on the other side, bonds $6,000,000 and capital stock $4,000,000, the relative sources of the investment in the property. Now, suppose that of the total property costs, $8,000,000 is subject to depreciation at the average rate of 4% a year. At the end of the first year we find included in the operating expenses for the year a depreciation charge of $320,000. Presumably the rates are sufficiently high

involved in limiting the funds to any specific renewals; they are fully available for any property or financial needs of the business.

BALANCE SHEET

As of January 1, 1910.

Assets	
Properties in service	$10,000,000
Total	$10,000,000
Liabilities	
Bonds	$ 6,000,000
Capital stock	4,000,000
Total	$10,000,000

to cover all the operating costs, including this charge, as well as to yield a fair return on the $10,000,000 invested in the enterprise.

But this $320,000 has not been actually expended, for the properties are comparatively new and no replacements were necessary. Suppose during the year through some sort of accident a piece of property worth $20,000 was destroyed and had to be replaced. There still remains $300,000 appropriated out of the revenues as a depreciation fund. This amount can either be set aside by purchasing an equal amount of gilt edge securities, or by reinvesting it in the properties, if the demand warrants it. In the first case, the net investment in the properties the second year amounts to $9,700,000. This together with the $300,000 of securities constitutes the total investment. In the second case, the amount of investment the second year remains unchanged. The full cost of the properties would be $10,300,000, but there would be the deduction of $300,000 for depreciation reserve, so that the net investment in the properties would still be $10,000,000; the original amount would thus be fully maintained. The same procedure is followed each accounting period.

Now assume that ten years of operation have elapsed and that the cost principle has been consistently carried out through depreciation charges, the accumulation of reserve, the proper retirement of properties, and the investment of depreciation funds. Assume also that during the period there has been actual additional investment through bonds issued $5,000,000 and an accumulation of depreciation reserve $3,000,000 invested in the properties. The balance sheet on January 1, 1920, thus appears as follows:

BALANCE SHEET

As of January 1, 1920

Assets	
Properties in service	$18,000,000
Total	$18,000,000
Liabilities	
Bonds	$11,000,000
Capital stock	4,000,000
Depreciation reserve	3,000,000
Total	$18,000,000

This assumed balance sheet shows after a ten year period total properties with an original cost of $18,000,000. Of this, $10,000,000 represents the original investment, $5,000,000 additional bond issues, and $3,000,000 investment of depreciation funds. If then we deduct the amount of the $3,000,000 depreciation reserve from the total cost of the properties, we have a balance of $15,000,000, the initial $10,000,000, plus $5,000,000 additional bonds issued, which is the net investment. If, however, the $3,000,000 were segregated by the purchase of securities, the left hand side of the balance sheet would show, properties in service,

$15,000,000; securities, $3,000,000; total, $18,000,000. The liabilities side would be identical.

The deduction of the depreciation reserve from the cost of properties in either case does not result in confiscation. The investors throughout the period of ten years obtained a return on their actual investment and the accounts now show the full investment intact. The depreciation policy therefore does not contemplate nor result in confiscation. Its purpose is to safeguard the properties and to maintain the integrity of the investment. If it is properly followed, the net investment is always equal to the total cost of the property, less the depreciation reserve. If, however, the depreciation funds are segregated in special assets, the net investment, as above stated, is equal to the total cost of the properties, less the depreciation reserve, plus the special assets. In either case, the full investment is preserved and the properties safeguarded from confiscation.

6. Depreciation Not Shown in Accounts

Under such systematic cost accounting, the net investment is at all times satisfactorily shown by the accounts. The difficulty is that in the great majority of cases, the accounting records are not reliable either as to the original costs of the properties in service, or as to the amount of such costs applicable to past operation. Consequently, in order to determine the net investment, an appraisal is necessary not only for the determination of the original cost of the properties, but also of the accumulated depreciation. When, however, such an appraisal has been made, the results are approximately the same as if proper accounting methods had been employed throughout. The appraisal on the basis of actual original cost less depreciation, serves therefore as the most reasonable adjustment of all properties where the facts are not shown satisfactorily in the accounts.

To determine the amount of the depreciation, we must resort to estimates. There is no other way by which the amount can be established. This is true also of finding the original cost. It is a difficulty inherent in any appraisal, that estimates must be made to take the place of exact facts which should have appeared in the accounts. Our proposal is that the uncertainties of investment should be eliminated once for all in every case by as exact a determination as is possible of original cost and depreciation of the properties, fixing a permanent and unchanging rate base for the existing properties.

7. Reasonable Estimates Necessary

Since we must rely upon estimates, it is necessary to exercise judgment and reasonableness. In computing depreciation, the common practice is to employ the so-called straight line method. Estimates are made of the total service life of each unit of property, and then the expired life is compared with the total life. This ratio applied to the original cost gives the amount of the depreciation to be deducted.

A refinement of the method would require that the final scrap value of the property should be estimated and deducted from the original cost. The difference would be the service value subject to depreciation. Then the percentage of used life compared with the total life would be applied to this amount. But this refinement is hardly worth while in the face of the large margins of uncertainty in the estimates of original cost and expected life.

The application of the straight line method must, of course, rest upon reason and common sense. It must not be employed in an abstract and mechanical way. It has been criticized frequently, and there has often been justice in the criticism for the rigid and dogmatic manner of its application.

8. Proper Life Average Main Consideration

A valid criticism has often been made of the inflexible assumption of the average life. Frequently, the average assumed for any class of property has been rigorously applied to all units even though it obviously does not fit the particular circumstances. If, for example, twenty years are found to be the average expected life of a street railway car, or of certain power plant equipment, or of any other particular class of facilities, this does not necessarily furnish an absolute basis for the computation of depreciation for such property under all circumstances. The life of plant is not a fixed element, but depends upon the conditions of a particular case.

Moreover, the average life of property, even if satisfactorily determined and applicable to the particular case, is usually not employed properly in the computation of depreciation. It is used as if all units of any class of property lived the assumed life, without regard to the fact that some live much less and some much longer. Out of 1,000 cars purchased at any one time, for example, the average life may be twenty years. But some of the cars will disappear from service within the first five years, others during the second five, and more during the next period, while many will last beyond the twenty years, and some even thirty years or more.

The average is based upon the total life of all the cars divided by the number of cars. Consequently, if after ten years of operation depreciation were computed, obviously only the remaining cars would come under consideration, while those that were retired during the ten-year period would be eliminated. But for such remaining cars, the average life would probably be about twenty-five years. Similarly, at the end of a fifteen year period, for the then remaining cars, the average total life might be near thirty years, and at the end of twenty years, there would still be many cars in operation and for them the average life would be over thirty years. Thus, the determination of depreciation at any one point involves, not the general average life of the different classes of property, but the average applicable to the remaining units subject to appraisal.[6]

The straight line method will result in error if general life estimates are applied to conditions to which they do not fit. Life tables for different classes of property are subject to a greater variety of conditions and are much less certain than life tables of humans. In a given corporation, a certain average may be too long, while in another it may be too short. Consideration must be given to the particular case when selecting the average life to be used in computing depreciation. It is, of course, absurd to compute for any unit of plant or equipment a large depreciation on a theoretical expired life when, as a matter of fact, the property is in first class operating condition, is economically suitable for its purposes, and has a much longer expectation in service than the assumed average. The proper ratio of depreciation is not expired life to a generally assumed average, but the expired life to the expected for the particular property to be appraised.

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[6] We have here the same principle that underlies the construction of a life insurance table. For example, the commonly used American Experience Table starts with 100,000 assumed average persons at age 10 and on the basis of long actuarial experience shows the mortality for each year of life, and on the basis of these figures states the remaining life expectancy at the beginning of each year. At each point of time the expectancy is the total number of years to be lived by the then remaining number divided by that number. Thus at age 20 the expectancy is 42 years; but at age 30 it is not 42 less 10, but 35; at age 40 it is 28; at every point it is the total remaining years of the group then living divided by the number in the group, eliminating from the computation the persons who had died in the interval. The same principle applies to property expectancy. While this factor is not of controlling importance, it should not be disregarded in valuation practice.

9. Obsolescence Factor Important

Great care must be exercised in determining the average life of the various classes of plant and equipment. This is particularly true with respect to the factors of depreciation included under obsolescence. These factors are difficult to determine and affect seriously the average life that may be reasonably used. Because of the uncertainties of expected life, especially because of obsolescence, a careful physical inspection may be more accurate than a computation of depreciation based on the straight line method. By a careful inspection of the different classes of property, an experienced engineer could determine approximately the fit condition of each class; whether it is 90 per cent, 80 per cent, or less.

The usual objection to the inspection method is that it disregards the factors of obsolescence, which often are the more important. There is no reason, however, why inspection should be limited to the mere wear and ordinary maintenance; under proper instructions, it may include just as readily all factors of depreciation. If it is made with the more comprehensive concept of depreciation in view, the results are likely to be more satisfactory than those obtained from the straight line method; there is not the danger of a mechanical application which may result in excessive or inadequate deduction. The determination of depreciation inevitably involves a large degree of judgment. No fixed rules can be laid down and blindly followed. Only persons with adequate experience and understanding are qualified to make an appraisal. If they approach the problem with a sense of responsibility and reasonableness, there is no great difficulty in making estimates which are fair to both the company and the public.

10. The Depreciation Issue

But whatever method be considered the more just and practical, the intent should be to deduct from the original cost of the existing properties an amount representing the impaired usefulness of the constituent parts. This corresponds with the principles of correct and systematic cost accounting. If the proposed appraisals are based upon original cost less depreciation, we shall have the requisite base for determining the future cost of service. The deduction for depreciation merely eliminates the part of the capital costs which belongs to past operation and was a part of the past cost of service. The remainder represents the net costs incurred for the benefit of future operation. This, then, is the net investment in property on which a return is required as a distinct cost element. Any special depreciation funds or other outside investments would be considered separately, and added to the investment if they formed a part of the necessary or reasonable funds of operation.

For the most part public authorities have held that in the appraisal of utility properties for rate making, a deduction should be made from cost new to eliminate all forms of depreciation. This practice has also been sanctioned by the Supreme Court of the United States.[7] But, as stated in a previous chapter, with the abrupt rise in prices, the problem of original versus reproduction cost assumed such importance as to overshadow depreciation in valuation cases, and the Supreme Court has said nothing about depreciation in recent years. The language, however, in the past cases, seems clearly to permit the deduction of depreciation.

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[7] See Chapter V, sec. 6.

There has been, nevertheless, an active controversy whether depreciation should be deducted from cost new of the properties in determining the rate base. The companies have mostly insisted that whether the valuation is based upon original or reproduction cost, no deduction whatever should be made for depreciation. Inasmuch as the controversy usually involves twenty-five to fifty per cent of the gross cost figures, to a large extent the arguments against the deduction have represented mere special pleading and hardly deserve consideration. They are not the material from which sound public policy can be constructed. They have been extensively urged, however, before commissions and courts, and have found support among writers of unquestionable sincerity who fully believe in the correctness of their views. We shall, therefore, discuss the more important points on their merits, as economic and public views entitled to serious treatment.

In the appraisal .of existing properties, the opponents of depreciation would start exactly as we propose—with an inventory of all classes and units of property in service at the time. The cost of each unit, whether original or reproduction cost, would then be determined. The aggregate cost of all such units would constitute the rate base upon which the company would receive a fair return, regardless whether the constituent units are new or have been in use for many years. The age, wear, or relative usefulness are treated as of no consequence, provided that the units are in service at the time of the appraisal. A concession, however, is made in that if there has been a deficiency in maintenance, resulting in deterioration for operating purposes, and if a substantial amount would have to be expended to place the properties in first class operating condition, then such necessary rehabilitation costs may properly be deducted from the cost new. The propriety of a deduction for deferred repairs is thus recognized, but otherwise all functioning units would be included in the rate base at their full cost, without deduction for any other factor of depreciation.

The controversy, therefore, resolves itself into the following questions: If there is any remaining use in a unit of plant or equipment, shall the full cost be included in the appraisal, although the bulk of its useful life has manifestly expired? Or shall we follow the fundamental basis of cost determination, recognizing that capital charges made at the time of construction or installation of property represent expenditures for the benefit of the future, and that they should be transferred and charged to operation as the property is consumed in service?

The issue stands out glaringly in the fact that only 100% depreciation would be recognized by the opponents to the deduction, but that any lower degree of reduction in the total usefulness of plant and equipment would be disregarded altogether. Our view is that the original cost should be diminished in proportion as the total economic use disappears in the course of operation. This is the fundamental cost accounting principle and it recognizes not only 100% depreciation, but 90%, 50%, 25%, or 10%. Why should not any measurable reduction in the usefulness of a unit of property due to past operation be deducted in the appraisal? Why eliminate only the full 100% loss in usefulness, but disregard all other degrees? We would deduct, therefore, not only deferred maintenance, but depreciation due to all causes reasonably computed according to facts and circumstances of each case.

11. Economic Death Seldom Determinable

A special difficulty confronted by the depreciation opponents is that of determining when the full 100% usefulness has expired. Just when is any unit of plant and equipment of no further use and to be excluded from the inventory?

The point of complete economic death of property can seldom be definitely fixed in practice. In the case of the bulk of equipment, and even of structures, there is a gradual decrease in the usefulness for the service, but the complete disappearance is difficult to establish. This fact can be illustrated by almost any important class of equipment. When, for example, do railroad cars cease to be economically useful? New cars are placed in the most important service of the company and bear the chief burden of the transportation requirements. Then after a period of time, with the development of better designs and change of requirements, new cars are purchased. These are then the most economical equipment and are assigned to the most important work, while the earlier cars have reached a stage of secondary use on branch lines of lesser importance. Another period elapses and further progress in construction of equipment takes place; again new cars are purchased and the original equipment passes down another step in the service. Thus gradually our old friends pass on down in the importance of service, and on the way stop on the sidings for storage purposes and perhaps are brought into use only on rare occasions. Finally they disappear from service altogether, with perhaps no record of their ultimate physical disappearance.

This picture is characteristic, and represents practically all classes of property. Power plant and equipment are subject to a like course of economic decadence. Generators are purchased which at the time are the most modern and economical, but gradually they pass down the line of diminishing usefulness, and finally merely occupy space in the power house where on rare occasions and under special conditions they may be pressed into service. Every experienced electrical engineer knows of such equipment, which is left in position only because the space in the power house is not needed for the more economical modern generating units.

The opponents of depreciation are thus faced with the practical problem of determining the point when property should be excluded from the inventory. No matter how inadequate or out-of-date a unit may be, there is always some available or remote use, if the storage space does not cost anything. There may be a contingency in which the thing might possibly be used and therefore it can still be considered as being in service and entitled to full cost consideration in the appraisal.

The absurdity is, of course, manifest and shows the necessity of facing the facts squarely. There is depreciation with the course of time, which should be recognized in every degree. There should be a deduction from cost new of the property, representing the degree of depreciation which has actually taken place either through wear and tear, or through advances in the arts, or changes in service requirements.[8]

[8] The illustrations of depreciation have been taken mostly from equipment, but the force affects practically all classes of property, including structures which physically may have an indefinitely extended life. Buildings just as structures may last 200 or even 500 years, but

12. Reserve Equipment in Valuation

The difficulty of determining the point when a piece of property ceases to be useful, calls up the special problem of reserve equipment, which has caused extensive dispute in past valuations. As illustrated in the preceding section, with the development of design and changes in service requirements, plant and equipment which were the best available at the time of purchase gradually pass on down in importance and finally justify their continuance only as reserve facilities to be employed in rare emergencies; this is their only useful purpose.

While the need of such reserve equipment is unquestioned, the problem is how to treat it in an appraisal when it is brought side by side with facilities which are up-to-date in design and bear the brunt of the work in the public service. Granted that some of the old cars may be needed during the peak pressure of grain movement in September and October, this does not change the fact that the bulk of their usefulness is gone, and that in a sensible appraisal they should not

their economic life seldom exceeds 25 or 50 years. They become obsolete or unsuited to newer business requirements, and must be reconstructed or superseded by modern buildings. A different example is found in the elevated railway lines in New York City. As original two track structures they were at the time the last word in municipal rapid transit and would stand up for centuries. But with constantly growing traffic and advance in construction, they had to be third-tracked with extensive rebuilding of the structure; a large part of the expense was thus replacing past depreciation and not improvements. Now the modern mode of transportation in congested areas consists of subways, and even the three track elevated lines are largely obsolete. But even some of the original subways have fallen behind progress and service requirements. Thus an original three track route on upper Broadway does not meet present needs and is heavily depreciated. Many of the old platforms are too short and require reconstruction for longer trains and greater carrying capacity, so that most of the reconstruction costs are not improvements but the making good of accrued depreciation. No management is ever justified in allowing for any plant investment a longer economic life than fifty or at most one hundred years.

rank equally with new cars which are in constant service of the most important kind.

As to power plant equipment, particularly generating units, we find that the reserve facilities consist invariably of old types, of relatively small capacity, huge in size, of large original cost, together with a high cost of output. In a large modern power house of say 200,000 k.w. capacity, the up-to-date equipment consists of units of 30,000 to 60,000 k.w. capacity. The reserve equipment, however, is composed of old units of 7,500 k.w. or less. But the modern units of large capacity, in spite of the present high level of prices, cost much less per k.w. capacity than the old units in spite of the great increase in price level. Progress has more than counterbalanced the force of rising prices. Moreover, the older units occupy relatively much more space in the power house, require more attention, and consume much more coal per unit of output. Nevertheless, the opponents of depreciation still hold that such reserve should be entered at full cost in the appraisal, at a higher figure per unit of capacity than the new equipment which really does the work of the business at a much lower cost per unit of output. This absurdity is so palpable that the idea involved can hardly be entertained.

We believe that some allowance should be made in the appraisal for equipment really needed for reserve purposes. But we must realize that its total usefulness has been greatly reduced when it is no longer employed in the major service, and that the degree of this reduction should be represented in the computed depreciation. There is a great deal of plant or equipment held by most corporations which is of little real use to the service. It exists merely because the companies have room for it, and often the demolition is deferred merely because of the expense. In other words, the unit is a liability instead of an asset; it is worth less than nothing. Sometimes, the items appear to be kept merely to make a showing for valuation purposes; so long as the property exists physically, some basis of claim can be made for its inclusion in the rate base, although its real usefulness has long since disappeared. Such pretense is unfortunately a factor in many appraisals and cannot be disregarded.

13. Fair Valuation of Varied Properties

Aside from the problem of reserve equipment in a modern plant, we are faced with the varied conditions in different plants. There are hardly two utility companies, even in the same industry, that follow identical methods and policies. Some have pursued a conservative financial course and exercised sound judgment in management, while others have frittered away their resources or have been lax in operating efficiency. Whatever the cause, actual experience shows a great variety in the up-to-dateness of plant and equipment of different companies.

For illustration, let us assume two power plants, each of 200,000 k.w. capacity. But while one contains generating units of 5,000 to 10,000 k.w.—units which represent a relatively large capital cost per k.w. and are operated at a high expense per unit of output—the other plant contains modern equipment of 30,000 to 60,000 k.w. capacity, at a lower unit cost of capital and with much greater efficiency of operation. But otherwise both plants are in good operating condition.

According to those who advocate valuations based on cost new, depreciation would not be a factor in the valuation of either plant. No deduction would be made from the primary valuation so long as the generating units are in good operating condition, without regard to their relative degree of efficiency. We should then have the valuation of an antiquated plant exceed per k.w. capacity that of a modern plant.

This is merely a striking illustration of conditions prevailing among all classes of renewable public utility properties. Most plant and equipment which have been in operation a number of years if placed beside corresponding modern facilities just installed, show clearly the difference as to present suitability for service. To establish valuations for all uniformly upon full cost, original or reproduction, appears utterly unwarranted.

We maintain that these differences should be eliminated in the net valuations through a deduction for depreciation. By taking into consideration the present condition of the plants we obtain valuations on terms of equality.

14. Treatment of Obsolescence by Opponents

With respect to the factor of obsolescence, the depreciation opponents interpose two objections: First, that it cannot be predicted, and, second, even if it could be foreseen there is no reason why the present consumers should pay for the future discarding of otherwise physically unimpaired units when the real benefits from the change will accrue to subsequent consumers. Since the old units are in good physical condition and require replacement only because of availability of improvements or changes in service requirements, the renewals are viewed as actual additions to be paid for out of new financing, not through prior provision out of revenues. The cost of the retired units is either to be kept in capital account or set up in capital suspense and then written off and apportioned to future operation.

Consistent with this stand on charges for obsolescence to future operating expenses, the opponents to depreciation oppose the deduction for this factor in the appraisal. As long as any property is still functioning, no matter how inefficiently, compared with available facilities, they advocate the inclusion of such units in the appraisal at their full cost. Indeed, some even go so far as to urge also the inclusion in the rate base of the unamortized amount of entirely discarded units. The inventory would thus include not only all existing property having any remote claim to usefulness, but also some completely abandoned properties to be resurrected for the sole purpose of the valuation.

Postponing for a moment the technical objection that obsolescence cannot be foretold, and keeping in mind that our immediate problem is that of appraisal of existing properties, let us inquire into the relative desirability of the two systems from an operating viewpoint. Aside from the fact that under strict cost accounting, all disappearance of property should be charged to operating expenses during its lifetime, adequate provision for obsolescence requires the accumulation for replacements before they are absolutely necessary. Under the renewal policy a company may find itself unable to finance the improvement because it would have to carry a double load when the new facility is introduced. In addition to the return on the new capital it would have to carry interest or other return as well as amortization cost of the investment represented by the dismantled facility. As a result improvements would be long deferred, and otherwise available rate reductions would be postponed.

The operation of the principle is best observed in unregulated competitive business. Where there is active competition, one cannot remain long in business if he does not take advantage of improved machinery as it appears on the market, because his competitors, existing or potential, would introduce the improvements and drive him out of the field. The only way to survive is to exercise foresight and be prepared to take advantage of new methods and machinery as soon as they are developed. This can be done only by charging to operation all costs, not waiting with the charge till the existing facilities are wiped out. The consumers will refuse to pay the double costs, when the products are offered by competitors at single costs.

The principle of rigorous charges for all forms of depreciation, including obsolescence, has been adopted by well organized unregulated business. It is adhered to even by large concerns which are usually considered to have substantial monopoly power. For example, the United States Steel Corporation and the Standard Oil Companies are constantly searching for improvements, and their depreciation provisions are more than adequate to replace any facilities when operating economies can be realized. Their purpose is to produce at every point at the minimum costs and to be in a financial position to take advantage of every improvement. This policy probably more than any other has held up their strong position against the constantly surging actual or potential competition.

Systematic depreciation provision places a utility on a par with scientifically managed private business. It enables a company to take full advantage of progress, installing modern facilities as freely as might a new corporation or competitor, without any overhanging fixed charges from antiquated or superseded property.

15. OBSOLESCENCE NOT DIFFICULT TO DETERMINE

As a practical matter, there is no insuperable or extremely great difficulty in observing and determining obsolescence. It has been grossly exaggerated and confused the issue. For all units of renewable property there is a more or less clearly defined period of usefulness. Reasonable regard for the history of development shows that for most classes of property there is a cycle of usefulness closely limited. This economic cycle seldom exceeds twenty-five years. It has been especially short in the case of power plant equipment, in which the factor of obsolescence has been particularly striking. While physically generating equipment is exceedingly durable, experience shows that its economic period has been less than twenty years. The lapse of time produces its changes in most facilities, and in the course of twenty years practically all power plant equipment is economically dead. It does not wear out physically, but it becomes inadequate or antiquated and useless. It is then superseded by modern units, and at best serves only for rare reserve purposes.

This effect of improvement and change appears in practically all modern public utility plant and equipment. Advances in design and construction are going on all the time, and in a period of twenty to twenty-five years a complete transition takes place, which on economic grounds requires the replacement of existing with up-to-date facilities. This fact is clear and should be recognized in the appraisal. Power plant equipment ten years old is not as good as new; a large proportion of its usefulness has expired, whatever its physical condition. The same applies to railroad cars, locomotives, and to practically all plant and equipment.

It is true that in judging future requirements for depreciation, obsolescence cannot be definitely determined. But sincere regard for the continuous developments in industry and service requirements will indicate to a considerable extent the changes which will take place in the future. Moreover, as the force of obsolescence develops it is evident to an intelligent management. The thing does not appear suddenly over night. It is a gradual development, clearly discernible to the experts in charge of operation. It can be fairly accurately measured as successive changes in the arts and in the requirements of service take place. It becomes apparent as it occurs, and a reasonable allowance can be made in the depreciation charges to take care of obsolescence as well as physical wear of the properties. It must be based on estimates, but the same is true of most important acts of management.

But our immediate problem is that of computing the depreciation of existing properties for a future rate base. For this purpose the fact of obsolescence can be readily ascertained. An intelligent and experienced engineer knows very well in making an appraisal whether a generating unit of 10,000 k.w. capacity or less is obsolete in a plant of 200,000 k.w. total capacity. Similarly, anyone with knowledge of cars knows whether the type is out-of-date, and the extent of the out-of-dateness. These facts do depend upon estimates and reasonable judgment, but a fair determination can be made. While in the case of any special unit there might be reason for a substantial difference of opinion, this would not be a serious matter for the properties as a whole if the purpose to determine the relative usefulness is clear in the minds of trained and competent appraisers.

16. SPECIAL CASE OF ABSOLESCENCE

A case involving an unusual feature of absolescence was decided by the Supreme Court of the United States on June 2, 1924.[9] The company through a special invention developed by its own engineer made improve-

[9] Pacific Gas Co. v. San Francisco, 265 U. S. 403.

ments in the manufacture of gas. The invention was developed during a comparatively short period of time and upon perfection a large part of the old equipment was scrapped and the existing stations were re-equipped with new and superior facilities. On the basis of direct cost, however, the original capital expenditure in the old equipment was substantially greater than the cost of the new. By excluding, therefore, the old equipment from the inventory and substituting the new at its actual cost, the valuation was lower after the improvement than before. Consequently, although the service and the usefulness of the property had greatly improved, the basis of return to the company was diminished. Such a result the majority of the court refused to accept, concluding that there was "error somewhere, either in theory or application of principle."

In this case there was the unusual situation where obsolescence affecting a large proportion of the equipment did come about in a short time and was scarcely foreseen.[10] For the most part, however, obsolescence is gradual, steady, and visible, and can be measured as time passes almost as definitely as physical wear and tear. In the particular case unquestionably there was the unreasonable result that because of the improvement a reduction in the rate base was made. The case was further complicated by the fact that, as brought out in the minority opinion by Mr. Justice Brandeis, an adequate depreciation reserve had been provided to take up the retirement of the old properties after the cost of the new had been charged to capital account. This illustrates glaringly the lack of definiteness and precision in our present methods of regulation. Although the company had accumulated reserves through operating expenses, it was not definitely required under existing methods to deduct the amount from the cost of the properties, and in the rate proceeding apparently was compelled to deduct only the depreciation which could be computed at the time, regardless of the amount that had been previously reserved. Under the circumstances, of course, the retirement of property for which reserves had been collected did result in a reduced valuation compared with the rate base had the improvement not been made.

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[10] This point, although accepted by the majority of the Court as fact, was contested by the City and in the minority opinion the City's contention was favored.

Under sound policy, with the rate base and all phases of operation under exact accounting control, a reserve accumulated out of previous earnings would automatically be deducted from the cost of the properties; the installation of any new units would be charged to the capital account, while the cost of facilities retired would be deducted from the depreciation reserve. Under such a procedure a company would not be injured by scrapping old and installing less costly but superior new equipment. Its net capital account would not be affected by the change. It would receive a return on the same amount, plus any additional investment that might be made through the improvements.

The confusion that the case illustrates can be remedied only by a thoroughgoing appraisal of existing properties and for the future keeping the rate base under accounting control. Thereafter any reserves accumulated for depreciation would be definitely maintained for that purpose and the company would not be benefited or injured by any changes in the properties.

17. Deferred Maintenance

A final point in the appraisal is the degree of maintenance that enters in the current repairs and minor renewals. It is true that neglected properties depreciate rapidly, while those well maintained depreciate much more slowly. Opponents of depreciation recognize the significance of neglected or deferred maintenance. Most of them concede that this should be deducted from the cost new of the properties. But we believe that this is an additional factor of depreciation. The final valuation should represent the original cost of the properties, less a deduction for all depreciation, including deferred maintenance. This is an item belonging to past operation and should not be made the basis of additional cost charges to future consumers.

18. Depreciation Reserves in Valuation

In determining the amount to be deducted for depreciation, the question arises whether any consideration should be given to existing reserves which have been accumulated either during the period of commission regulation or prior thereto.

While no absolute answer can be given to this question, usually the reserves shown by the accounts are of little use in the problem of determining the reasonable depreciation deductions. There are relatively few cases where reserves have been accumulated equal to the deduction that should reasonably be made from the cost new of the properties. If the reserves shown on the books were taken to control, it would result in the grossest sort of variation in the different valuations. There would be a large number of properties with very small or no reserves, and a few with excessive reserves; in very few instances would the reserves have any direct relation to the depreciation that actually exists. The only way by which all cases can be treated in a reasonably uniform manner is by computing accrued depreciation in each particular property.

The results would thus not be affected by the particular financial policies that any corporation may have pursued. All would be placed on the same basis of determining the appraisal according to the original cost of the properties less deduction for full but not excessive depreciation.

In the few cases where excessive depreciation reserves have been accumulated, there is a serious question whether, as a matter of law, the full deduction could be made from the original cost. It seems to be the opinion of the courts that a company is entitled to the full earnings realized under any particular rates authorized by the commissions or statutes. Out of such earnings, all actual operating costs are to be deducted, including a proper amount for depreciation. If, however, a company has failed to make adequate provisions for depreciation, this would be viewed as its own delinquency and would not serve as a reason for not deducting full depreciation in the appraisal. Similarly, if the company made excessive charges, this probably would not change the fact of what would be the proper deduction for depreciation and the company would still be entitled to the full return realized above the cost of operation.

To the extent that the view just stated controls, a company would be entitled to any excessive reserves accumulated above the actual depreciation of the properties. While such an excess resulted from charges made to the public, it would be considered not as a depreciation reserve but as a surplus accumulated out of the profits of the corporation. It would be the property of the company, not subject to any limitations and control, nor deductible from the original cost of the properties in computing the net investment. But again this general view might reasonably and legally be modified where a company under direct regulation has long continued excessive depreciation charges because of the alleged rapid changes in the business, and where the commission had kept the charges under scrutiny for years, recognizing them in rate making and authorizing them because of the rapid force of obsolescence asserted by the company.[11]

19. OTHER RESERVES IN VALUATION

The view just presented applies also to other special reserves accumulated by a company. In the second Consolidated Gas case, there were involved large contingency reserves which had been accumulated out of earnings and which partook largely of the nature of depreciation reserves. The point was advanced by the Attorney General of the State of New York that this reserve should be treated as a deduction from the cost of the properties; that it represented a contribution by the public through the payment of rates and should not be deemed as an investment of the companies. This contention, however, was overruled by the Supreme Court, and the contingency reserve was recognized as representing property of the investors on which a return should be allowed.

In the several cases involving the 80 cent law, the theory of the Attorney General was that the contingency reserves or excessive earnings accumulated during the period of the 80 cent rate, or especially during active rate making under the Public Service Commissions Law, should be used to offset losses or deficiencies in return during the years of high operating costs. This view was based particularly on the provision of the New York Statute that in fixing rates allowance should be made for "a reasonable average return upon capital actually expended." It was argued that in this provision the Legislature expected that surplus earnings of good years should stand against later deficiencies, and thus there should be a continuous accounting between the public and the company. The Court, however, overruled the contention and did not permit any earlier excesses to counter balance losses for a period when the rates were under question.

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[11] In the Knoxville case, the Supreme Court refers to the duty of a company with respect to depreciation as follows: "If, however, a company fails to perform this plain duty and to exact sufficient returns to keep the investment unimpaired, whether this is the result of unwarranted dividends upon over-issues of securities, or of omission to exact proper prices for the output, the fault is its own. When, therefore, a public regulation of its prices comes under question the true value of the property then employed for the purpose of earning a return cannot be enhanced by a consideration of the errors in management which have been committed in the past." 212 U. S. 1, 14. This passage has been quoted and referred to in subsequent decisions.

The converse proposition that excessive reserves are the property of the company, follows logically the Knoxville view, and is inferred from the language in the Galveston and the second Consolidated Gas cases, where the point was emphasized that past profits belong to the company and cannot be used to offset current losses or deficiency in return.

The same reasoning presumably applies to any surplus accumulated out of earnings derived from rates authorized by public authorities. In the same case, the Supreme Court indicated clearly that practically each year the company was entitled to all the net earnings realized under the particular rates in force. This would apply not only to the special reserves and to surplus, but probably also to excessive depreciation reserves accumulated beyond the requirements of systematic depreciation charges.

The law, however, is not entirely clear, and the public authorities are free to follow the rule of reason with only the general limitation that the investment must not be confiscated. But, in the face of the wide variation in practice as to the depreciation charges and the accumulation of reserves, the best policy in making a final valuation would probably be to disregard all actual showing of reserves, and to determine the depreciation deduction either on the straight line basis or through an adequate inspection of the properties. The existing condition of the property would control.

20. Future Depreciation Provision No Problem

The difficulties of determining depreciation apply wholly to the appraisal of existing properties for the proposed initial valuation. For the future, the provision for depreciation involves no serious problem. The annual allowance must, of course, be based upon an assumption of average life of the different classes of property. The amounts charged to operating expenses should in any event be adequate, and credited to the depreciation reserve, while at the same time it would result in the retention of an equal sum of money in the business from the current revenue. By this procedure the investors would not be affected at all. The amount of the investment would not be diminished or increased. It would still be the definite sum resulting from the appraisal, plus any additional investments made subsequently.

If the estimates based on the assumed average life of the properties should result in an inadequate provision for depreciation, the fact would appear clearly in the course of very few years. If the economic life of the properties proved to be shorter than had been contemplated, this fact would appear clear to the management long before any serious impairment of the property had taken place. When the fact of the inadequacy appeared, a greater allowance could then be made, and the deficiency supplied in subsequent years.

Likewise, if the depreciation charges proved to be excessive and greater reservation were made than needed, this fact would also appear in the course of operation, and adjustments could be made reducing the subsequent allowance. The maintenance engineers, in constant contact with the properties and with periodical surveys, would discover whether the actual usefulness corresponds to the preliminary estimates of average life.

In case excessive reserves should be accumulated above the strict requirements, there would be no ground for special objection on the part of the consumers, because the investors would get no advantage from the accumulation. The additional reserves would be invested in improvements and extensions, and would be preserved for the benefit of the public. While temporarily such excessive provisions might mean slightly higher rates than would be strictly required over a period of years, the consumers would be relieved from the interest burden which would otherwise be imposed through additional investments required for the improvements.

The problem of reserves for the future is in no case a serious one. Even excessive accumulations would result in such a small additional current charge to operating expenses that it would be negligible in the determination of rates. There is no real danger that a prolonged unreasonable burden would be imposed upon the consumers. The purpose would be to make a proper allowance, with the full understanding that it is based upon estimates, and that revisions would have to be made in the estimates from time to time as they prove to be out of accord with the facts of operation.

Moreover, as depreciation estimates are made not of the property as a whole, but of its various units, it is quite likely that the errors in one direction would be compensated to a large extent by errors in the other direction. The actual usefulness of some units will exceed the estimates, and will fall short in others. And the net margin of error in the total depreciation charges would probably be small.

21. Depreciation Versus Renewal Charges

The opponents of depreciation not only object to a reduction from cost new of existing properties for the determination of the rate base, but they claim that for the current or future determination of operating costs, charges for depreciation result in the imposition of unjustified burdens upon the consumers and in the accumulation of reserves which are never needed for the purpose of maintaining the properties used in operation.

The primary problem with which we are now dealing is that of valuation; to determine once and for all what is the reasonable rate base as to existing properties for future rate making. We are, therefore, concerned principally with the question of whether or not, in establishing such a definite rate base, a deduction should be made for the impaired or expired usefulness of the properties. This question should be decided on its own merits, regardless of what the proper policy should be with respect to future charges for depreciation to the operating costs.

It is, however, important from the standpoint of a consistent policy of regulation to inquire whether it is more desirable to base all future operating charges, including the cost of property consumed in service, upon a consistent cost policy, or upon the alternative proposed by the opponents to depreciation. They claim that the proper charge is, not current depreciation based upon life expectancy, but the cost of actual renewals when property outlives its usefulness and must be replaced by new units.

The exact procedure by which such replacement costs would be charged to operating expenses might vary according to the particular accounting system. It might be either the cost of the renewals or the cost of the property retired. For the most part, however, the procedure suggested would provide a renewal reserve to which the annual charges to operating expenses would be credited on the basis of cost of renewals or retirements over a period of years, so as to equalize approximately the charges between individual years. When actual renewals and retirements take place, the cost would be charged not directly to operating expenses but to the reserve.

The proponents of this view draw a sharp distinction between such a retirement or renewal reserve and the depreciation reserve of our discussion. The latter would reach during the life of any company, especially as a fair average settled condition is reached, 25 to 40 or even 50% of the original cost of the properties in service. The opponents of depreciation insist that such large reserves are never needed for the purpose of actual renewals or retirements, and that their accumulation merely imposes upon the public an unjustified burden. Their counter proposal of renewal or retirement reserve would never result in the accumulation of a large amount. It would probably never exceed 5% of the original cost of the properties in service at any time. Its sole purpose would be to equalize approximately the actual renewals or retirements from year to year.

22. Procedure in Case of Single Unit

Apart from the matter of determining a definite future rate base for existing properties there is the question, which of these two policies constitutes the correct cost determination for future rate making. The purpose of the accounting system is to record correctly the cost of service, and in this cost to include a proper allowance for property which disappears in connection with operation. Which is fundamentally correct: To base the charges upon depreciation as we describe it, or upon the cost of renewals or retirements?

Our view is that the depreciation method furnishes the correct accounting. Any capital charge for renewable property is merely a cost in suspense which is gradually conveyed to operation with the expired usefulness from period to period. For example: The expenditure of $5,000 for a street railway car is charged to the property account with the clear realization that the car would be consumed in service, and that say in twenty years it must be retired and replaced by a new car. The original cost of $5,000 was incurred for the benefit of operation during the twenty years, and is properly chargeable over the period in proportion to the relative annual use. The charge to capital is thus a mere accounting convenience: First, to record investment; and, second, to furnish the basis for making the annual charges to the cost of operation.

The opposing view is that the capital cost should not be apportioned annually on the basis of relative use during the life-time of the property, but should be charged in its entirety to the cost of operation at the time of retirement and replacement. The unsoundness of this view appears immediately when it is applied to any individual unit of property. The fact stands out obviously without possibility of contradiction that, of course, any unit is consumed during its life-time, and that its cost should be charged to operation according to the relative annual use.

23. The Same Principle for Many Units

The opponents to the depreciation system readily agree that for a single large item of equipment, the depreciation principle is correct and the renewal method wrong. If there were only the one unit, the entire cost of replacement at the end of twenty years could not be charged at once to operating expenses and then paid by the consumers.

They stress the point, however, that a public utility property is not a single unit, but consists of many varied items which will not need to be renewed at the same time but will equalize themselves from year to year, and will cause approximately equal annual charges for actual replacements. From this view of the facts, they conclude that the property as a whole is a continuous thing and is adequately and properly maintained if the renewals are made as required in the course of operation and if their cost as incurred is charged to operating expenses.

Our reply is that if the depreciation system furnishes the correct method of cost allocation for a single large unit, it cannot be wrong if likewise applied to hundreds or thousands of individual units of different kinds of plant and equipment. It applies to a thousand cars as well as to one. If systematically followed, it comprehends every unit of the vast variety of property and apportions as to each separately the original installation cost of operating expenses during its life, with provision for renewal at the time of retirement.

If this principle is properly carried out, is not the cost of service correctly computed, and is not the renewal of the property systematically safeguarded? Where does the principle go wrong in passing from the consideration of a single unit to the multitudinous units of a large and varied property?

The renewal method is obviously wrong when applied to any single item of plant and equipment. It is equally wrong when applied to numerous units of various classes of plant and equipment. For every one it defers the full charge to the time of renewal instead of apportioning the cost equally over the entire service. It disregards the fundamental fact that each piece of property is consumed in operation and that its cost therefore falls equally over its entire period of operation.

24. The Property as a Whole

The proponents of the renewal idea rather etherealize the conception of "the property" as a whole. They look at it as an entity in itself, over and above the constituent parts, just as man is more than arms, legs, body, head, etc. But following such an exalted view, we must realize that also "man" must be renewed as he lives, taking food, water, air, etc., regularly or almost constantly, with no regard to the specific loss of a leg or arm, or even the breakdown of tissues or cells. The constant intake of body making materials is exactly equivalent to full maintenance, including depreciation charges, and if it is not sufficient to make up the full depreciation there is bodily deterioration although the "man" as such may continue to exist.

A similar attitude is noted in those who attempt to draw upon the more general economic conception of "capital" as a "fund." The view is that in a large and varied property, the individual units wear out or become unsuited to operation, and are replaced, but the fund itself is maintained by constant renewals. There is no special objection to such a fund theory except that it also is somewhat metaphysical. Of course, capital is a fund which is preserved through renewals, but the preservation is consistent and complete through the systematic depreciation allowance and not through the renewal policy. By the one, the fund is automatically renewed as drawn upon through operation, while by the other renewal is postponed to the time of complete depletion of the various constituent units so that the level of the fund is reduced. The question is: How is the fund kept up to its original level, by depreciation charges which constantly meet the depletion as incurred, or by the renewal method which defers the restoration till the complete disappearance from service of the several parts? Likewise, from the standpoint of valuation we may ask: How is the fund to be measured, as if all the units were up to date in their service requirements, or according to their actual state of wear and serviceability?

But such transcendental concepts applied to utility properties are hardly justified. We are dealing with plain material things, definite costs, and concrete operations. The property as a whole is only a group of constituent units and the costs are determined accordingly. Each additional unit requires and adds its own capital outlay, and, except in case of land, each depreciates individually in the course of operation, and it is this fact that is provided for systematically through the depreciation charges. As depreciation takes place it constitutes immediately and directly a cost of operation and forms a part of the cost of service. If there are a thousand units, the force works separately on each unit, and every one contributes its individual part to the current depreciation chargeable to operation.

There is no doubt that the larger the corporation and the more varied the different classes of plant and equipment, the more nearly there is an equalization of annual replacements. But under such conditions the charges to operation under the retirement or renewal system will not differ materially from those under the depreciation system. The fundamentals, however, must not be disregarded that in reality it is the depreciation that takes place, and that the approximation of the renewal or retirement charges to depreciation is due merely to the condition of large properties with a wide variety of plant and equipment.

25. New and Growing or Settled Properties

Moreover, even in the case of large and varied properties, substantial equalization between depreciation and renewals takes place only if a settled condition obtains, where the properties have practically reached their maximum size and the annual retirements have approached a fairly constant level from year to year. Such a point is rarely, if ever, reached by a utility. It does not appear in case of newer properties, or, which is most prevalent, in the case of utilities with growing properties, where a general average age has not been obtained and annual renewals are still on the increase. In the latter cases, the retirement charges are less than capital depreciation, and the costs chargeable to operation on the renewal basis are correspondingly low. With new properties the retirements are few during the earlier years, and on the renewal basis the charges to the cost of operation would be negligible. Likewise the renewals on the recent additions to growing properties would be few. But on the depreciation basis, the full annual proportionate costs are included in operation, notwithstanding the fact that actual renewals are long deferred to the future. We believe, as a sheer matter of proper cost determination, this is the correct principle. The property is consumed in operation during the earlier years in spite of the fact that renewals are far deferred, and the appropriate costs should be included in operation accordingly. It is also a proper financial policy that the earlier consumers should contribute through the rates for the accumulation of reserves to correspond with the actual consumption of the property, although the final retirements and renewals will not take place until a later time.

The distinction between newer or growing properties and those which have reached a fairly average settled condition, must be kept clearly in mind in discussing the validity of the two alternative procedures. Undoubtedly with the newer or growing properties the depreciation charges are higher than the renewals and the costs paid through rates charged for services would be greater. But this merely accords with the fact that the costs have actually entered into the service and should be paid through rates. There is no reason why the earlier consumers should pay relatively less than later ones when they actually have made use of the property. Moreover, so far as consumers as a whole are concerned, they provide for the accumulation of reserves during the earlier years to be invested in further additions and improvements upon which no return will be required, while otherwise such construction would require new financing with additional payment of interest or other return. Even if the reserves are invested in special funds, the earnings of the funds go to the benefit of the consumers. In any event, therefore, if the earlier consumers pay the full cost of the service they will prevent the placing of undue costs upon later consumers who get the benefit of the reserves and who would otherwise pay higher rates.[12]

[12] The purpose of depreciation charges is the proper distribution of original capital costs to operating account, and the result should be equalization of net annual cost of unit output so far as the depreciation charges are concerned. But such complete equalization would not be obtained by strict application of the straight line method; it would produce somewhat higher net unit cost of output during the earlier years of the plant and equipment and a lower cost during later years when average conditions and fair stability of renewals have been reached. This is due to the effect of the depreciation funds, whether invested in outside securities or in properties used in the business. Full equalization, however, would be produced by the "sinking fund" method as explained in note 2 section 2 of this chapter. But, in any event, striving for exact theoretical adjustment is not worth while because of the wide margins of uncertainties in any of the estimates. Consequently the simple "straight line" method is probably the most satisfactory, with periodical revision of charges as the previous estimates prove to be out of line with the reasonable requirements of the business.

26. Illustration of Settled Properties

Referring again to the older properties, wherever an average settled condition has been nearly reached, we may illustrate the fact that the depreciation policy would result in the same annual charges as the renewal policy, provided that either is consistently followed. Assume a large street railway company with 1,000 cars used in operation, each car costing $5,000. The total original cost of the 1,000 cars would thus be $5,000,000. Assume an average life of twenty years. Under the depreciation policy, the annual charge for depreciation would be 5% of the total original cost of $5,000,000, or $250,000 a year. But under the renewal policy there would be an average annual renewal of 50 cars at $5,000 a car, or a renewal charge of $250,000 a year. In this case, manifestly, it makes no difference whether we make a charge for depreciation as such or for renewals and retirements.

These figures illustrate the general principle that wherever there is a large property where averages may be safely employed, and where a settled condition has been reached, the renewal policy, consistently followed, results in the same charges as the depreciation policy. This fact has been overlooked by the opponents of depreciation and their expressed solicitude for the consumers is unfounded. Where, however, newer or growing properties are involved, the facts should be faced squarely that the depreciation charges are higher than renewals and should be included in the cost determination used for rate making.

27. Is a Reserve Needed?

The opponents to depreciation never tire of pointing out that the reserve accumulated during earlier years, may reach 30% or 40% of the total original cost of the properties, and will remain so without subsequent diminution; consequently, is not needed or used. The statement as to size of reserve is correct, but the conclusion as to need and use is wrong. The funds retained in the business through the depreciation charges, as previously set forth, constitute the real renewals of property consumed in operation, and are needed constantly for that purpose. They are either expended for new property or are otherwise employed for the financial benefit of the business. There is no question of their being used and needed. But, as to the large reserve, its sole use is to indicate statistically how much of the original cost of the properties in service at a particular time has already been charged off to past operation. It has no other use; that is its exclusive function. It is augmented by the sums charged to operating expenses and is diminished by the original cost of property retired; and at all times its balance shows the amount of depreciation already accrued and charged to past operation on property then in service. What more use does anyone wish, when the funds themselves are doing their full duties in protecting the financial stability of the business?

And here is exactly the difficulty. The critics do not understand what is really involved financially; they confuse the funds which are continually working with the reserve which is a statistical and cost measurement. A 40% reserve merely records that 40% of the existing property costs represents accrued depreciation that has been included in past operating expenses. If the fact is accurately reported, that is all there is to it, and there is no further use for the figure.

Let us reiterate the controlling fact that the direct depreciation funds locked within the business through the charges to operating expenses, are indeed needed and used. Their immediate function is to replace the property consumed in operation as indicated by the charges to expenses. Their purpose is to maintain the integrity of the investment; to replace immediately all capital impairments due to the force of operation. How specifically they are to be employed for the benefit of the business depends upon the particular circumstances of a company.

In the case of growing or developing properties, the most important use of the depreciation funds is the acquisition of new plant and equipment, for which otherwise bonds or other securities would have to be issued, with additional fixed interest or other obligation for return. In the case of non-expanding properties, the depreciation funds are invested in income bearing securities and thus relieve the consumers to that extent from paying a return through rates; or they are used for the purchase of the companies' own obligations and thus reduce the direct burden of return upon the consumers; in either case they serve to equalize the cost of service paid by the public during the earlier and later years of operation before and after settled conditions have been reached. They serve, therefore, not only to maintain fully the investment and safeguard financial stability, but also to equalize the cost of service and rates paid by succeeding generations of consumers, covering the period of development before settled conditions obtain.

The fact must not be overlooked that the reserve reaches 30% or 40% during the period of expansion, and consequently already exists under the depreciation policy when settled conditions are reached and strict annual renewals become equal to the depreciation charges. The funds, therefore, have already been expended on properties and do not remain as unused cash or are separately invested. They have fully served their public purpose; have been needed and used for the benefit of the properties and the consumers. They have, in short, kept the interest or burden of return 30% or 40% lower than would otherwise be the case, assuming the same properties and scope of operation. The funds are thus fully employed, and the reserve stands as a clear record of the fact that the investment provided by the security holders has been definitely maintained and that the present consumers are not asked to bear costs which properly belong to prior operations.

28. Depreciation Provides Comparability

But even where settled conditions in a large property have been reached, we believe that the depreciation policy as such is better for the purpose of regulation. If regulation is to be effective, a uniform policy ought to be used throughout in order to simplify the process, and to make comparisons between different properties more feasible. There are several factors which should be briefly considered.

The first and controlling point is that regulation is concerned not only with large, varied, and comparatively settled properties where there may be a fair equalization of annual replacements, but it has to do with all kinds of properties, in the great majority of which there is no such equalization. Nevertheless, even with the former properties there is substantial variation in renewals from year to year, a fact which is recognized by the proposal of a renewal reserve to provide for annual fluctuations. But outside of these properties, there is great variation from year to year and company to company. There are large and small properties; growing and settled; great variety of units and few large units; and all sorts of combinations.

Consequently the only way by which uniformity may be obtained between all kinds of properties is to apply consistently the depreciation method. The results of operation should be available to the public authorities for comparison between companies, and actual cost has to be used for this purpose. If the renewal policy is employed, there would be great variation in costs shown by the individual companies for lack of consistency in practice, and comparison would be vitiated. But if the depreciation policy is followed regularly, the charges for ultimate renewals are included on a uniform basis by all the companies without regard to the fact whether renewals are actually made or not. The same basis of cost is consistently included throughout, so that comparisons can be validly made between the various companies.

It must not be overlooked that the actual making of renewals and retiring of properties is largely a matter of operating policy. This is not determined solely by the fundamental fact whether the usefulness of a certain unit has expired, but also by the financial or other factors governing the operating practice. The variety of treatment would be reflected in the operating costs under the renewal policy, but eliminated under the depreciation system. As depreciation charges are made, the costs are included in operation, and then the management is free to make renewals according to its particular purposes. The depreciation charges, therefore, would be consistent throughout among all the companies, whereas the renewal policy might vary greatly from one corporation to another.

29. Replacements Indistinguishable from Additions

Another fundamental point is that in practice it is often difficult to determine whether in a particular instance an expenditure made for property represents technically a renewal or an addition or improvement. If the depreciation policy is consistently pursued the distinction is not material, because all costs for property would be charged to the property account whether the items are technically renewals or improvements and the reserve would be deducted from the total cost of all the properties, whether technically renewals or original additions. But if the renewal policy obtains, the technical distinction would have to be adhered to throughout, and would often require arbitrary determination.

To illustrate the difficulty of distinguishing between additions to property and renewals, let us consider in the case of a large railroad the purchase of cars. At what point is a purchase of particular cars to be deemed as renewals or additions? As the old cars are gradually shifted to lesser service new cars are needed. They are purchased without thought of whether they are technically additions or renewals. Similarly, the old cars are gradually relegated to less and less important service and finally are used for only minor purposes. At what point are the old cars definitely to be treated as retired and the new cars substituted? Clearly the two acts have no relation to each other. New cars are purchased as needed, and old cars are retired when they cannot serve any further conceivable use. A distinction between additions and renewals would be purely technical and arbitrary.

This illustration is typical of practically all classes of utility property. The changes are so great and various that the demarcation between additions and renewals cannot be satisfactorily maintained. Under the depreciation policy, as stated, when new property is installed it is immaterial whether it is recognized as an addition or replacement. In any case the new expenditures are gradually charged off as depreciation, and ultimately all original costs of renewable property are conveyed to operation without regard to the fact whether actual renewals or retirements have taken place. When the useful life of the property has expired on the basis of sound estimates made by the management, the original cost will have been transferred to operation without regard to the fact whether the plant or equipment still physically exists. When a unit is actually retired, it is taken out of the property account and charged to the reserve. As to investments shown by the accounts, however, it is immaterial whether an item remains charged to the property account after its economic life has expired, for the cost in any event has been properly conveyed to the operating expenses as the usefulness of the property has disappeared, and is counterbalanced in full by the depreciation reserve.

30. Depreciation Method Assures Financial Stability

Perhaps the most important point in favor of the depreciation policy as against the renewal or retirement policy is the financial stability it assures to the utility. Aside from initial overcapitalization, the failure to provide properly for depreciation was the major cause of the recurrent financial collapse, the numerous receiverships and periodic reorganizations with consequent huge losses to investors and demoralization of service in the railroads and other utilities.

But if in the earlier years of their development the lack of provision for all forms of depreciation, especially obsolescence, was in part due to inexperience, there is no more excuse for such a lax policy now. We have seen again and again for the last fifty years how all processes of industry, including the utilities, have undergone one change after another. The railroads had to be practically rebuilt from the bottom up; electric facilities have undergone tremendous changes; street railways have had to acquire radically different means of operation. These changes are taking place right now, and every competent and conscientious engineer readily recognizes and admits the importance of depreciation in the operation of any property.

There can be at this date no more doubt about the desirability and necessity of adhering consistently to a depreciation policy. It is economically the correct cost system. It establishes unformity and thereby makes it possible to compare different properties, requires no arbitrary determination of replacements and additions, and, above all, contributes to financial stability. This method would include all actual economic costs in operating expenses to be paid through the rates charged for service. The properties would be adequately maintained whether actual renewals are made or not. The commissions would have a more valid basis of cost comparisons between individual corporations. While either system may be used for some properties in the future, when once the uncertainty of the present rate base has been eliminated, the depreciation system would be far the more satisfactory for all purposes of regulation.

31. Opponents Concerned with Valuation

The objectors to depreciation, however, are primarily concerned, we may assume, not so much with the future policy of making proper charges in the cost of service for expired property, as with the matter of valuation. In the determination of the rate base, they are interested materially as to whether or not past depreciation shall be deducted from the cost new of the properties. This makes a great difference in the total amount upon which a return would be allowed. If this point were once finally determined beyond the possibility of revival, the companies would probably not manifest much concern whether the charges to operation are to be based consistently upon depreciation or upon renewals or retirements. They would not be financially benefited or injured by the one method or the other, and would get the same fixed return in either case.

The main reason for the strong opposition to future charges for depreciation is probably the more or less conscious desire of supporting more forcefully the position that depreciation should not be deducted from the cost new of existing properties in determining the rate base. If the utilities agreed to the view that the charges to operating expenses should be based on depreciation and a corresponding reserve should be accumulated, they would manifestly appear inconsistent if at the same time they argued that past depreciation should not be deducted from the cost new of the property in fixing the rate base. Even a court inexperienced with financial matters, especially technical accounting procedure, would see the obvious inconsistency of requiring, on the one hand, the consumers to pay for depreciation and the accumulation of a reserve, and at the same time allowing a return on the full cost new of the properties regardless of depreciation, and of the funds contributed by the consumers and invested in or for the benefit of the properties.

With the realization of this inconsistency, the companies seem to be eager to eliminate from all accounting records and from all rate making policy every direct consideration of or reference to depreciation. Consequently they present the view of charging to operating expenses the cost of property at the time of renewal or retirement. If this view were accepted, it would appear to square with the argument on the valuation side against the deduction for depreciation; that the full original cost of all property used in service should be included in the rate base. There is no purpose here to charge deliberate deception, but only to point out the important financial interest that weighs in favor of the renewal policy. The fact is that practically all outstanding management or valuation engineers, or accountants and economists, competent in such matters, and not under the financial influence of the companies, subscribe to the depreciation point of view.

32. CONCLUSION

Our belief is, however, that in resolving the present uncertainties as to investment in existing properties, the facts themselves should be considered without special reference to future operating methods. We have to do with present plant and equipment, and the question is, upon what amount are the investors entitled to a return? How can we treat consistently and fairly all classes of properties under various physical conditions, with all sorts of past operating policies? The reasonable course is to inventory the present properties in service, fairly compute their original cost and then deduct such part of the cost as applies properly to past operation and fix for a permanent future rate base the part that applies to future operation. This means original cost less depreciation as the rate base. It would place all properties in the same relative position, eliminating all past wear and obsolescence, presenting the results throughout on a direct comparable basis with new property.

If this method is reasonably followed without too rigid adherence to technical considerations, it presents the fairest and most sensible method for the purpose of establishing a definite rate base for existing properties and placing regulation upon a workable basis for the future.

CHAPTER VIII

SPECIAL ITEMS IN VALUATION

1. Character of special items. 2. Separate valuation principle for land unjustified. 3. Land subject to same limitation. 4. Actual investment proper basis. 5. Appraisal of current assets. 6. Net current assets equal working capital. 7. Good will not element of value. 8. Past deficiency legally inadmissible. 9. Also impracticable. 10. Going value concept not clear. 11. Cost of obtaining customers. 12. Overhead items enumerated. 13. Four overheads not specially difficult. 14. Cost of financing analyzed. 15. Overheads as percentages of physical valuation. 16. Overheads charged to operation. 17. Depreciation of overheads. 18. Consolidation costs. 19. Rule of reason.

1. Character of Special Items

In the preceding two chapters we have discussed more particularly the valuation of physical properties which are tangible in character and must be periodically renewed. We have been concerned (1) with the direct cost of labor and materials which enter into the construction or installation of plant and equipment used in the public service; and (2) with the deduction for expired usefulness of these properties.

Besides these factors, however, it is necessary to give special consideration to various intangible or overhead construction costs, and to items which are not directly identified with plant and equipment. These latter include land, working capital, and going value. The intangible construction costs include organization expenses, engineering and superintendence, omissions and contingencies, taxes during construction, and cost of financing.

2. Separate Valuation Principle for Land Unjustified

The valuation of land requires special consideration because it has come to be regarded by many rate making bodies as differing in character from plant and equipment, and deserving independent treatment in the valuation.

Our view is that land does not differ essentially from other physical property, and should not be treated differently in valuations. There is only one distinction: Land does not depreciate in use. It represents a permanent investment, not subject to periodical renewal. But even land may be subject to depreciation, although this is not usually the case. Where, however, land was purchased for operating purposes and in the course of time became unsuitable for operation, then if it can not be turned to other uses without loss on the original cost, the amount of the loss is depreciation in the nature of obsolescence. But a similar profit should be included among earnings. In the appraisal of land, as in that of any other physical properties, the basis should be the fair original cost actually paid for it. Where the cost is not known, it should be estimated like that of any other physical properties.

In rate making practice, however, there has come to be a tacit assumption that land must be treated differently in the valuation. Even commissions which have adhered more or less consistently to original cost less depreciation as the proper rate base for plant and equipment have appraised land for the most part on another basis, recognizing the so-called present values as indicated by adjacent land at the time of the valuation.

The idea back of this distinction rests perhaps upon a confusion of what is really involved. As utility land is found side by side with land employed for other purposes, the first impulse is, naturally, to take the market value of the other land, which is more or less clearly ascertainable, as the criterion for the utility land limited to utility purposes. But any other physical property of a utility may be similarly compared with outside properties used for other purposes. The market value of any outside properties can be used as a measure to determine the valuation of similar utility units. But if this course were adopted for all classes of property, it would result in the recognition of reproduction cost as the basis of rate making, with the objections which have been already considered.

3. Land Subject to Same Limitation

The basic approach to the proposed valuation is from the limitation imposed by the underlying public interest. All investments in whatever properties are subject to this limitation. Land purchased for use in operation is under the same restriction. It is vested with the public interest exactly as are buildings and the various classes of equipment.

No principle was ever enunciated excluding land from the scope of the public interest and from the limitations upon other physical properties of a utility. When land is acquired for railroad or other utility purposes, it is immediately restricted in use to the particular public service. Whatever the values which may develop in adjacent lands, these depend on the possibility of various other uses, mercantile, manufacturing, residential or what not. But utility lands are limited to the special enterprise, and are not available for the uses which are the cause of the values developed in the adjacent properties. Consequently, whatever the increase in the value of other land, this is due to the possibility of especially profitable uses which are not open to the utility lands.

This point is fundamental but is usually overlooked. Its application may be studied particularly in case of railroad right of way and terminal properties. To a large extent right of ways were acquired by the railroads either as free grants or at very low cost at the time of construction. It is true that a new railroad produces immediate increases in nearby land values; better markets become available for agricultural lands; new towns spring up for business and residence; new factory sites develop; new uses and greater values But this does not create any new opportunities for the railroad land itself. When acquired it was consigned once and for all to railroad operation, with the recognized limitation upon earnings. It was taken permanently from the market for any other purpose. It was no longer available as farm land, factory sites or for residential developments. Its investment was made upon the expectation of a reasonable return as railroad property. It was dedicated to the public service, and limited like any other railroad property in the returns that might be obtained.

The same reasoning applies to terminals in the cities. The land was obtained mostly before the large municipal developments had taken place. Because of the very location of the terminal, however, new outside improvements appeared and values near the terminal increased. But this advance was due to the possible new uses and the consequent larger profits that could be derived from those properties. The railroad land, however, is not available for other things and therefore is limited to the reasonable returns upon the investment.

The proper view of utility land or other physical property is that it was acquired in connection with a large cooperative undertaking. The investment was made for a public purpose and was expected to make other properties and business more useful and therefore more profitable. The development of any utility causes the emergence of new values because of the new uses and profits made available. But the utility itself is merely a public convenience undertaken at joint expense through which the other developments are obtained. And these developments would be greatly impeded if the utility valuations were to be increased in proportion to the new uses outside. If a return were allowed on valuations based upon outside developments, the burden upon other properties and industry would often be so great as to cause a collapse or prevent further development.

4. Actual Investment Proper Basis

It is true that the original cost of utility land is often strikingly at variance with present prices of adjacent or similarly located land available for other purposes. This divergence is much greater than in the original cost of structures and equipment as compared with the present reproduction cost. Moreover, land grants by governmental bodies, free of cost to the utilities, have not been uncommon, while money gifts expended in other physical properties have been much less frequent. Finally the practice of the commissions and the views of the courts have inclined toward the recognition of the present range of prices of land as if available for other purposes.

All these conditions make the strict application of the original cost principle to land somewhat difficult. If a particular parcel of utility land purchased in 1890 for $1,000 would now cost $25,000 (i. e., if it were free from its public use) the divergence is so great that it is difficult to limit the valuation to the original cost. And yet, since the land has been limited throughout to utility purposes, is it just to increase the charge upon the public twenty-five fold merely because of the great advance in other land values? Suppose a terminal site was granted free to a railroad, so as to obtain for a municipality the advantages which go with an important railroad location. Assume that now the land occupied would be worth a million dollars if available for other purposes. To allow nothing in the valuation for the land seems perhaps unreasonable, and yet why require the public to pay a return on a million dollars for property which was given by the public for the railroad purposes? Should the public pay a huge return on its own contributions for utility developments?

In the case of railroads particularly the strict adherence to original cost of land, with the elimination of public grants, would mean a very much lower burden upon the public than valuation at present prices of adjacent or similarly located land available for other purposes. The problem is difficult and important, and should be solved by a final determination. While, perhaps, there is a legal inclination to present range of prices, the rights of the companies have never been definitely determined. A reasonable investment policy, which would recognize the change in price level applicable to stockholders' investments, would probably be upheld by the Supreme Court. Certainly if such an adjustment were made, there is no reason why in addition great increases in land values should be allowed beyond the investment. Why should the public pay a return where there was no sacrifice, and where the properties were never available to the other uses upon which the present values of other land are based, and where the properties always were limited to a fair return?

The sensible view is to appraise all utility land on exactly the same basis as other property—actual investment. If we are to accept actual investment for other physical properties, there is no compelling reason for departing from the principle in the case of land. And the reasonableness of holding to actual investment becomes all the more clear if we allow an adjustment on stockholders' investment for the change in price level.

But the decision rests with the legislatures and the commissions, subject, of course, to judicial approval. What we urge is to make a final valuation of all existing land, as well as other properties, and fix the amount entitled to a return permanently for the future, without further fluctuations. Then, after the rate base has been fixed, all additional land would be added at actual cost and limited to that amount. In the case of sale of utility land in the future, any losses below the initial valuation or actual cost, should be absorbed through the cost of service, and any profits should be deducted from the cost of service; or both losses and profits might be absorbed through a special reserve employed for the equalization of return to the investors. In any event, land should be treated throughout as other property not subject, in the future, to any special loss or profit, but entitled to a return on the amount included in the rate base.

5. Appraisal of Current Assets

Another special item is that of "working capital." This has been subject to a great deal of misunderstanding but in reality is quite simple. The only reason for giving it special consideration lies in the method of making an appraisal. The usual practice is to include in the primary appraisal only the so-called fixed capital, which consists of plant and equipment with a service life of more than a year. The direct appraisal consequently covers land, structures, buildings, equipment, machinery and tools, and would be based upon original cost less depreciation.

Besides such fixed capital, however, there is also the working capital consisting of materials and supplies, cash, accounts receivable, and other current assets that are reasonably necessary to the operation of the business. These items are appraised under the term "working capital." This sum is added to the fixed capital, and the total becomes the rate base on which a fair return should be allowed.

The principle of valuing such current assets does not differ from the general principle of valuation. The assets should be appraised at their actual cost. For cash and materials and supplies the amount can be taken directly from the records, while with the accounts receivable it is only necessary to eliminate the bad accounts which are not collectible. Mostly the problem of depreciation is not encountered.

A special problem, however, arises in the case of current assets which do not appear as yet on the records at the time of the appraisal, but which represent, nevertheless, investment for the benefit of the business. Such items are illustrated in the case of gas companies by the gas stored in the holders before delivery to the consumers. This gas represents the cost of labor and materials employed in its manufacture. While the charges appear in prior operating expenses, the appearance of the corresponding assets in the accounts is delayed until the gas has been delivered to the consumers and the accounts receivable are taken upon the balance sheet. The amount is therefore subject to appraisal. It should, however, be included just as any other outlay of capital for the public benefit.

In the same class with gas in the holders are all sales of gas or electricity or any service which has been taken by the consumer but for which bills have not yet been sent out and for which, therefore, nothing appears in the accounts. From the time of manufacture and the charge of the cost of labor and materials to operating expenses, there is nothing to show in the accounts for the cost on the asset side until the amounts are billed when they are entered as accounts receivable. Consequently all the intermediate items, including unbilled service, should be determined by separate appraisal.

6. Net Current Assets Equal Working Capital

The first problem, then, is to find the cost of all the current assets reasonably necessary and held for the conduct of the business. Then there is the question of whether or not any considerable amount of such working capital has been contributed by current creditors who do not receive interest or any other return upon the amount of their contribution to the assets.

For the most part the investment in public utility properties either imposes a direct interest charge or requires the payment of a fair return. In the case of most current creditors, however, the situation is different. While they contribute funds to the business they do not impose any interest burden and do not get a return on their investment. Consequently, the proper procedure in determining the total amount of the investment entitled to a return is first to find the valuation for all properties and assets, and then to deduct the amount contributed by creditors who do not obtain any return.

Such current liabilities consist usually of unpaid taxes, unpaid wages and salaries, and unpaid accounts for materials and supplies. In general they include all non-interest bearing obligations that have been incurred in connection with operation and have resulted either in like charges to operating expenses or in the direct transfer to the company of asset items corresponding to the amount of the liability. Since, however, the assets obtained from these sources are included in the appraisal, the liabilities should be deducted from the gross amount to determine the sum on which a return should be allowed. The reason for the deduction, therefore, is to eliminate from the rate base any capital sum on which actually no return is received by the contributors.

The computation of working capital consists there fore in determining the original cost of all the current assets reasonably employed in the public service less the amount of the current liabilities. The balance is the net working capital which should be added to the net appraisal of the fixed capital. The total is the amount of the valuation or rate base.

There has been considerable confusion in the computation of working capital. A clear-cut statement of principle has seldom been made which would show the relation of working capital to other assets. The practice has frequently been to include the current assets without deduction for non-interest bearing current liabilities; but this would allow a return on a capital sum on which actually the company incurs no liability for return. Consequently a cost element is allowed where there is no cost to the company.

In some instances little or no regard has been given to the actual working capital employed in the business. In such cases a computation is made of the estimated amount of working capital which the corporation ought to have, and then the amount is added to the fixed capital. Frequently the basis for such an estimate is a sum equal to two or three months' operating expenses. While such estimates in particular cases may be fairly reasonable, as a general proposition, however, they are not in accord with actual facts. The question is not what capital a corporation ought to have, but what it actually does have. It is the capital really employed in the public service that should be the basis of the return. This can be determined for working capital exactly as for fixed capital by a survey of the properties, with the deduction of the amount contributed by non-interest receiving creditors.[1]

7. Good Will Not Element of Value

The third special item of valuation that requires separate consideration, is that of "going value," which has been involved in a great deal of confusion and misunderstanding. The term cannot be satisfactorily defined because of its undetermined status. Its probable scope can be best indicated by showing what it does not include.

The first thing that can not be included in going value is "good will." The two ideas are easily mixed and in ordinary discussion are readily merged into each other. While there may be difficulty in their practical segregation, the concepts are distinct.

Good will represents the value of a business in excess of the monetary investment, due to the profitableness of the enterprise. It represents the fair market or selling value of the business as a whole, due to the existing customers, the various commercial connections, superior management, advantage of location, etc., which together have produced a capital value in excess of the investment. To illustrate, assume an ordinary unregulated business with an investment of $100,000 and a return of 8% to support the investment. Then, assume that the business develops and the earning power is finally established at 16% upon actual investment. Of this total return, 8% is required under our assumption to support the investment, and the extra 8% becomes the basis of an additional capital value in the business. This capitalized income constitutes an additional value of $100,000 above the $100,000 invested, and represents good will.

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[1] "Working capital" as here defined corresponds to the term as used by accountants. It consists of current assets less current liabilities. But the same total valuation would be obtained, if first all the assets, fixed as well as current, were added together, and then the current liabilities were deducted. The procedure is one of convenience and not principle.

This illustration sets forth clearly the idea of good will as capitalized earning power in excess of the required return on the investment in the business. It is due to earning power and follows the rates or prices charged for the service or product. With this idea clearly in mind, we see immediately that the good will element must be eliminated from public utility valuation for rate making. Such a value is dependent upon the rates to be charged, and consequently if we were to determine, to start with, the value of the earning power on existing rates, it would be impossible ever to obtain a reduction in rates. The investors are entitled to a fair return on their sacrifice and not on any good will that may have been established by rates that bring more than a fair return. This view has been definitely recognized by the Supreme Court.[2]

8. Past Deficiency Legally Inadmissible

Another view of going value which must be discarded, is that of past losses or deficiencies in return. This has been extensively discussed and has had the support in the rate practice and legal decisions of several states. In the State of New York, for example, the Court of Appeals, the highest court of the state, ruled[3] that a company is entitled to a fair return not only on the physical properties employed in the service, but also upon the going value, which was specifically defined as consisting of past losses and deficiencies in return on actual investment. The idea was clearly set forth in the opinion and it was definitely recognized that if a property has not brought sufficient returns in the past, the accumulated amount is to be added to the physical appraisal for rate making purposes. This view has been more or less clearly followed in rate practice in the State of New York since the 1914 decision. The same idea has prevailed in Wisconsin, and has received favorable recognition in other states during the past ten years.

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[2] Wilcox v. Con. Gas Co., 212 U. S. 19; Cedar Rapids Gas v. Cedar Rapids, 223 U. S. 655; and others.

In spite of its definite recognition in the decision of the highest court of the State of New York and by regulatory bodies in other states, going value as past losses and deficiencies in return, has been definitely rejected by the Supreme Court of the United States in the Galveston case. This refusal to permit the inclusion of past losses or deficiencies in return, was subsequently further emphasized in the Atlanta Gas case, decided June 11, 1923.[4]

9. Also Impractical

From a practical point of view apart from the strict legal decisions, the deficiency idea will not work. It is true that from a liberal standpoint of justice, a company which has not had an opportunity to earn a fair return in the past should not be prevented from making up the deficiencies in the future. If we are to assume a property carefully conducted without mismanagement, which has been unable to earn a fair return during the development period, then on grounds of broad justice it does seem that it should be permitted to make up later the past losses or deficiencies. But the difficulty lies in the practical application of this otherwise reasonable view.

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[3] Kings County Lighting Co. v. Willcox, 210 N. Y. 479, March 24, 1914.

[4] The New York ruling was clearly enunciated by the Court of Appeals and presumably controls under the New York Constitution. It is difficult, however, to see how it can be maintained in practice against the Supreme Court decision.

In the first place, how are we to determine in any given case the fundamental causes of the deficiencies? Were they due to mismanagement, financial manipulation or bad business judgment? In most instances it would be very difficult to segregate fault or mismanagement from causes which would justify the allowance of the deficiencies. The separation would have to be made usually on an arbitrary basis, unless all past losses and deficiencies were recognized.

Then the question also arises as to just what items should be allowed. If we are not to penalize future consumers for past errors on the part of the management, does not this extend also to miscalculation by the utility of the time and effort necessary to make the undertaking profitable? Assuming that the initiators of the utility expected to realize adequate returns sooner than proved to be feasible, are they not themselves to blame for their poor judgment? Why penalize future consumers? And it is difficult to assume that there were organizers who had actually expended the money with the idea that the losses would continue for many years and that the expected returns would be long deferred to the future.

Another point is that in a large proportion of cases, the original mistakes in the location of the business or premature undertaking before it was financially justified, were liquidated within a comparatively short time after the mistakes were realized. The history of railroads and public utilities is replete with receiverships and reorganizations within a short period after the business was begun. Unless the enterprise proved profitable soon after operation started the loss could not be carried along many years. Insolvency was the inevitable outcome, resulting in receivership and reorganization, and usually transfer of ownership to a new group.

At the time of such reorganization the earlier deficiencies in return were liquidated and the people who sustained the prior losses were mostly eliminated from the business. New interests took control who had no share in the previous loss. If from that point on, the business proved profitable the present owners did not realize any deficiency and are not equitably entitled to its inclusion in the rate base. If, however, again after reorganization the losses continued, there was then a period of further struggle followed by a second reorganization. Losses due to inadequate development of the territory served, cannot be carried along for many years without insolvency and reorganization. Consequently, for the most part, the past deficiencies have been liquidated and the people who actually sustained the loss are not the present owners, in all probability.

But even where there has been no reorganization, in most cases the present owners nevertheless did not sustain the early losses. Through the sale of stock the ownership is transferred gradually from one group to another, so that over a period of years in a large proportion of cases substantially a new set of owners appears. The stock, however, is sold throughout on the basis of its expected earning power at the time of each sale. Consequently, during periods of losses or deficiencies the prices were correspondingly low and again the original losses were liquidated and were not borne by the present owners.

Another point against allowance of past losses and deficiencies in the future rate base, is the fact that no similar provision could be made for a deduction in case there have been excessive earnings in the past.

To justify any general rule of valuation on the ground of reasonableness, it should apply systematically to all classes of cases. If the proposal is to allow an addition for past losses and deficiencies, it should provide also for a deduction of past excessive returns. But such a deduction is impracticable. In the first place, the Supreme Court has apparently decided that, as conditions now stand, the companies are entitled to a return on all their present properties, including the investment of any surplus accumulated out of earnings through authorized rates. If, therefore, there have been excessive earnings which have been invested in the properties, they belong to the company and are entitled to a fair return. Since, then, as a matter of fundamental law, past excessive earnings cannot be deducted, where is the reasonableness of including, as an addition, the past losses or deficiencies?

But besides the constitutional obstacle to systematic addition or subtraction for past deficiencies or excessive earnings, it is manifest that if past excessive earnings have been paid out to the stockholders in dividends, either directly in cash or indirectly in the form of stock dividends upon which they have been receiving cash dividends, it would be utterly unreasonable and unthinkable to deduct such excessive payments from the present valuation. If it were done, there would be tremendous destruction of present market values; i.e., a destruction of earning power even though adequate properties exist. Such a thing, of course, could not be done. The only opportunity to deduct excessive earnings from the valuation would be in cases where no distribution of dividends had taken place, but where the excessive earnings had been accumulated in surplus and had been invested in properties. It would scarcely be reasonable or just, however, to make a deduction in such cases when none can be made in others where the distribution of earnings has taken place. The only fair policy, therefore, is to disregard both past earnings and past deficiencies, and to take into account the existing properties, determining the fair investment in them, and fixing definitely once for all a rate base for the future. When this has been accomplished, we can then provide for subsequent excessive earnings and deficiencies in a systematic way, with full justice to investors and the public.

10. Going Value Concept Not Clear

If good will and past deficiencies in return cannot be included in going value because they are illegal and unreasonable, they have at least the merit of being definite concepts and more or less concretely determinable in dollars and cents. But the scope of going value that the Supreme Court of the United States has recognized in valuations for rate purposes is not clear.

Mr. Justice Lurton approved the inclusion of about one-half million dollars in the valuation of a water plant in order not to "limit the value to the bare bones of the plant, its physical properties, such as its lands, its machinery, its water pipes or settling reservoirs, nor to what it would take to reproduce each of its physical features. The value in equity and justice must include whatever is contributed by the fact of the connection of the items making a complete and operating plant. The difference between a dead plant and a live one is a real value. . . .''[5]

But this something which must ''in equity and justice'' be added to the ''bare bones'' has proved to be so shadowy, that no separate and definite amount has been required by the Court for it in later cases.[6]

As to the matter of the ''bare bones'' of the physical properties, however, the valuation itself with deduction from full cost only for depreciation, together with a full return on the valuation, would seem to provide the blood and tissues of life. It is exactly such a valuation and a return established through the rates which mark the difference between a dead plant and a live one. This establishes the value and follows the recognition of a going concern. Any value adequately supported by rates is really ''going value.'' Otherwise there would be only scrap. It is difficult to see how there would be any additional value dependent upon the fact that a recognized value is supported by rates; a value following from the fact that there is value.

If there is a separate element of going value required by the courts, we believe that the regulatory authorities are practically free to determine a just policy as to its inclusion in the rate base. We should, therefore, apply to going value the same fundamental question as to all other claimed property values, viz.: Does it contain a factor of cost? Does the property, as constituted at the time of the appraisal, contain an investment beyond that represented by the physical properties and working capital?

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[5] Omaha v. Omaha Water Co., May 31, 1910, 218 U. S. 180.

[6] Cedar Rapids Gas Light Co. v. Cedar Rapids, March 11, 1912, 223 U. S. 655; Des Moines Gas Co. v. Des Moines, June 14, 1915, 238 U. S. 153. See also Denver v. Denver Union Water Co., March 4, 1918, 246 U. S. 178, where a separate amount allowed by the Master was approved by Court, because "the Master expressly declared that his detailed valuation of the physical property and water rights included no increment because the property constituted an assembled and established plant, doing business and earning money. . . ."

11. COST OF OBTAINING CUSTOMERS

We believe that there is a definite element of investment in at least some cases in addition to physical properties and working capital. This consists of the capital cost, if any, of obtaining existing customers. Where expenditures actually have been made to obtain customers, they do represent a capital outlay in addition to the properties and should therefore be included in the rate base. The mere argument that they have probably in most cases been charged entirely to operating expenses, is not sufficient to exclude them from the valuation. Undoubtedly we would find that numerous improvements in physical properties have been included in operating expenses which emerge now in the appraisal. Our proposal has been all along to disregard all past accounting methods, consider only the present facts, and determine the rate base accordingly. If this view is followed, we must recognize that to obtain customers may cost something besides the investment in physical properties. If there is such cost, it constitutes an investment. It is this investment, if any, which we suggest should be included as going value in the appraisals.

This idea, however, is not to be expanded so as to include past deficiencies in return or good will; it is to include only the fair and reasonable costs that were actually incurred in obtaining the existing customers. It must be admitted that in most instances it will be difficult to determine these costs, because the facts are not readily obtainable. In some cases, however, there will be found records upon which to base a fair estimate. But this factor must be kept within reasonable limits, and not used to inflate the valuation. The determination should rest upon the facts of the particular company. Where the facts, however, are not available, a fair investigation should be made as to whether or not there had been such special capital outlays, and if so, what the fair amount has been. The fact, however, should be recognized that in most cases the growth of the business is automatic with the growth of the population. Customers mostly present themselves because they desire service. Consequently an investment in obtaining customers should not be assumed merely because the business exists. An addition for going value should be based only upon a reasonable determination of the facts that there was such a capital outlay for the development of the business. In this as in other items cost is the only consideration.

12. Overhead Items Enumerated

Besides the special items discussed above, there are also various intangible or overhead construction costs which represent investment, but which usually are not included directly in the appraisal of plant and equipment. These items cause the major disputes in the appraisals. In the determination of the physical properties there is usually no great difference of opinion between engineers and valuation experts when once the basis of the appraisal has been agreed upon. But in the determination of the various overheads, or intangible items, there are usually wide differences of opinion.

These intangible items are five in number and will be discussed in the following order:

(1) Organization expenses; (2) engineering and superintendence; (3) omissions and contingencies; (4) taxes during construction; (5) cost of financing.

13. Four Overheads Not Specially Difficult

Under organization expenses we classify all the expenditures made prior to the launching of the enterprise, like the cost of making preliminary surveys of the business with estimates as to the possibilities of the enterprise; the cost of obtaining charters and special franchises; together with the necessary expenses for the engraving and printing of securities and establishing the corporate records. All these preliminary steps in establishing the business are necessary and should be recognized in the determination of a permanent rate base.

The second item, engineering and superintendence, represents the cost of the general organization required for the actual construction and installation of plant and equipment. The cost of labor and materials and ordinary supervision goes directly into the appraisal of the physical properties. But the more general engineering and superintendence which cannot be readily charged to individual units of plant and equipment appear as an independent item of valuation. This includes the cost of preparing detailed surveys, determining final plans and specifications, and all the general supervision required in the installation of the properties as a whole. Such general engineering and superintendence is an inevitable expense and must be recognized in the total valuation.

The third item is omissions and contingencies. In any inventory of physical property that may be made there are bound to be omissions. Their extent depends upon the degree of care with which the inventory is prepared. If a complete inventory of all facilities were made there would be no ground for a separate allowance. But such accuracy is seldom attained and, therefore, some reasonable provision should be made for omissions. In the same group may be included injuries and damages caused in connection with construction, and losses due to miscellaneous contingencies for which separate titles or accounts may not be provided. These items involve usually actual expenditures which are unavoidable under ordinary circumstances and should be recognized to a reasonable extent in the appraisal.

Another item of intangible costs is that of taxes during construction. This consists of the actual taxes or payments made to governmental bodies during the period of construction or installation, prior to operation. These expenditures are inevitable and constitute a proper charge to the investment.

14. Cost of Financing Analyzed

The last general group of intangibles is the cost of financing. This involves two categories: (1) Interest during construction; and (2) discount on securities issued. The first item, we believe, is properly included as investment, while the second has been erroneously urged by public utility interests and should not be included in the valuation.

Interest during construction represents, in general, the fair return on the capital funds during the construction period, before the properties are placed in operation. While the funds are tied up in the process of construction or installation, the interest accruing on the bonds or notes issued for capital purposes, constitutes a proper construction cost and ought to be included in the valuation. In case the funds are provided from the issuance of stocks and not bonds or other interest bearing obligations, the right of the investment to a return during the construction period nevertheless exists. The stockholders are entitled to a return from the time the funds were contributed; and during the period of construction the amount of the fair return constitutes a proper capital charge and ought to be included in the appraisal. But after construction and installation are completed, both interest charges and return on stockholders' investment should come out of the earnings of the business and are no longer chargeable to capital account.

The allowance for interest during construction should be based as nearly as possible upon the facts of the particular properties. For the most part, however, the facts cannot be directly determined from the accounts or records of the corporation, and reasonable estimates are necessary, as in all other elements of the appraisal where the facts are not directly ascertainable. The determination, however, should rest upon what would have been the reasonable interest cost or the proper return on the investment during the period that the funds were tied up in construction. It should represent net interest or net return actually payable to the investors.

The second item in the cost of financing is presented usually under discount and bankers' commissions. The idea is that besides ordinary interest or return on investment, the corporation in financing the enterprise was required to sell its securities at less than par value, i.e., allow a discount and that the discount should be included in the valuation. Our view is that this discount is not a separate item chargeable to construction. The amount of the investment made through the issuance of securities is measured by the actual cash received by the corporation and available for the purposes of construction. This amount subsequently reappears in the shape of physical properties or the other overhead expenditures. In addition, however, there is a carrying charge for interest or return during construction. But the interest rate allowed should be high enough to absorb not only the direct interest payment on the par value of the securities but also to cover for the construction period the proportionate part of the discounts incurred. The total discount belongs to the entire life of the securities. Consequently only the part applicable to the construction period should be provided under interest during construction. The rest should be charged to subsequent operation during the life of the securities.[7]

The basic fact is that any discount on bonds or stocks is due to the deficiency of the rate of interest or rate of return on the securities compared with the market rate applicable to the particular bonds or stock. If the rate promised on any security issue is high enough, the selling price is at par and there is no discount. If the rate exceeds the market rate, then the security sells at a premium. But if the rate is less than the market rate, then there is a discount, which is equal to the capitalized amount of the deficient nominal rate compared with the market rate applicable to the security.

There really are two factors involved: (1) The pure discount, which is the difference between the par value and the price paid by the investor, and (2) the banker's or broker's commission, which is the difference between the price paid by the investor and the amount received by the corporation. Thus, a 6 per cent security of $100 par value may have been sold to the underwriter or banker for $95, who in turn sold it to investors for $97. While strictly speaking, therefore, only three points represent the discount to equalize the nominal with the then current market rate of money, we have in mind the inclusion under interest during construction the entire five points, because it is usually impossible to determine how much of the discount incurred by the company is due to one or the other; and to the corporation the result is the same whether the distinction is made or not, for it is concerned in what it gets for the securities and in the return it must pay. Likewise we are interested in the capital funds obtained by the company and in the net return paid.

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[7] While we speak here of discount on securities in general, strictly the item appears only in the issuance of bonds and not capital stock. The latter cannot be legally issued at a discount; and if there were a discount, it would remain permanently as a mere offset to the par value of the stock.

The rate of return at which we suggest that the interest during construction should be computed, is the reasonable market rate and not the nominal rate, which may be less or greater than the market. If the market rate is employed in the computation, it automatically allows the corporation the full carrying charges during the period of construction. In other words, the market rate of interest allowed in the appraisal includes the portion of the total discount which properly belongs to the construction period, while the rest is absorbed through the earnings during the life of the securities. The total discount is properly absorbed or amortized during the life of the securities and appears currently from year to year as part of the net interest or return payable. The part chargeable to investment is only the amount applicable to the construction period and not the total discount as is usually claimed by the companies; the rest should come out of subsequent earnings. If, then, the net interest is allowed during construction, there is no reason for a separate allowance of discount or cost of financing. The full cost has already been allowed, and the additional discount would be duplication of capital charges.

The view just presented has been generally recognized by economists and financial writers and sustained by the courts. There is no decision from the Supreme Court of the United States which recognizes an additional cost of financing besides full interest or return during construction. The relationship between discount, market rate and nominal rate on the par value of securities has become fairly definitely recognized by judicial and rate making bodies.

15. Overheads as Percentages of Physical Valuation

The determination of all these overhead items, as already suggested, presents difficulties and the claims are easily subject to exaggeration and gross inflation. There is no doubt that the items do involve capital expenditures, but the amounts allowed should be kept within reason.

The proper approach to a reasonable determination should be the actual reasonable expenditures for these purposes. But unfortunately in most cases the data are not available and estimates must be made. This should be determined in the most reasonable way, as close as possible to the facts in each particular case.

Perhaps the best procedure is to fix a reasonable percentage for each item and apply the same percentage to all the properties. To illustrate: Upon the cost of labor and materials charged directly to the physical properties an allowance may be made of 2% for organization expenses, 5% for engineering and superintendence, 1% for omissions and contingencies, 2% for taxes and 5% for interest during construction. This makes a total allowance of 15% for overhead on top of the direct cost of labor and materials included in the appraisal. The percentage for taxes and interest would allow liberally for a construction period of over a year, on the assumption that not all the funds are provided at the beginning. In some cases these percentages might have been exceeded, but in most cases they would correspond reasonably to the facts and would allow sufficiently for the probable expenditures incurred. Certainly, if the total surcharge considerably exceeds 15%, there is reason for special investigation and the greater amount should not be allowed unless clearly justified by facts. In the same way any substantial lower amount should be carefully scrutinized as to its reasonableness.

16. Overheads Charged to Operation

A complication inevitably appears in the determination of overheads in that a large proportion of most properties was constructed or installed in connection with operation. There are very few instances where the present properties were provided under the initial construction program over a single period of time. For the most part the properties were started on a small scale and gradually expanded over a long period through additions and extensions as the business developed. In most cases there was piece-meal and not outright construction of all the properties.

Because of the gradual development of the properties, many overhead costs incurred in the construction or installation were not charged to capital account, but were absorbed in the current operating expenses of the corporation. Consequently, in comparatively few cases of large properties is there a direct construction account which shows the expenditures chargeable to the various items. But they were nevertheless capital costs and should be included in the appraisal. The percentage may be small because the work was done in conjunction with operation, so that only the additional costs directly due to construction should be included. In any event, however, the reasonable costs applicable to any case should be determined according to the particular facts. The use of percentages is desirable, but must not be followed blindly without regard to the special circumstances.

Since in most cases the accounting for overheads in the past has corresponded very little with the actual facts of construction or operation, we are compelled in an appraisal to disregard the accounting and make our determinations according to the facts as they appear. Consequently, the intangible costs, if incurred in connection with existing property, should be allowed in the valuation even though some of them had been charged to operating expenses. In such cases, the operating costs were over-stated, and the returns or profits realized were in reality greater than the amount shown in the accounts. But the reverse is true whenever expenditures chargeable to maintenance or operation of the properties have been charged to capital accounts. It is the purpose of the appraisal to make a determination once for all of these and all other uncertainties in past accounting. Our view is that all reasonable capital costs should be allowed, if incurred, whatever the past accounting methods, but that the overhead items should not be employed for an unjustified inflation of the valuation.

17. DEPRECIATION OF OVERHEADS

Another question in connection with the items enumerated is whether a deduction for depreciation should be made as is the case with physical plant and equipment.

The usual idea is that the overheads are not subject to deduction for depreciation. This view, we believe, properly applies to organization costs, but not to the other intangible items included in our classification. The original organization cost is an expenditure incurred once for all. But in the case of engineering and superintendence, taxes and interest during construction, the allowance is based directly upon the amount of the physical properties installed. A proper procedure, if it were practical, would be to make a distribution of these items to the physical units of plant and equipment so as to show no such separate intangibles. The separation is merely one of convenience, and does not change the fact that the costs were incurred in connection with the existing physical properties. Consequently, the reasonable view is that the gross cost of the various overheads, with the possible exception of organization expense, should be diminished by the same percentage of depreciation as applies to the rest of the properties.

The question of depreciation on overheads, however, is not important. In this, as in all other matters of the appraisal here discussed, reason and common sense ought to be employed. In any event, if the gross overheads are limited to reasonable percentages, any further deduction for depreciation is of little practical significance.

18. Consolidation Costs

Another class of items must be mentioned in passing because they are frequently encountered in valuation practice: Consolidation costs, purchases of property from one company by another at a higher price than the original installation, securities issued against franchises or contracts, moneys paid or securities issued for patents or licenses used in the service.

These are all items of somewhat exceptional character and are extremely troublesome if a valuation is to be fair to both the public and the investors. The cases are not infrequent where in the consolidation or merger of companies securities were issued on the basis of expected greater earnings resulting from the combination and exceeded the net investment in properties. Often, indeed, the consolidation could not practically have been effected without a capitalization of a considerable part of the greater earnings. How then shall such issues be treated, if they were thoroughly justified through the savings realized, and particularly if at the time they were consistent with the laws and were subsequently actually supported by sufficient earnings? What shall be done especially if for a decade or more the securities were bought and sold on that basis prior to any systematic effort at rate control? To cut down ruthlessly to investment in existing physical properties would destroy previously established market values and would be hard on innocent purchasers. But to recognize the over issues, places the burden of partly dubious financial practices upon present consumers.

A recent case involved the purchase of existing property by a much larger corporation. The latter paid perhaps 50% more than the actual investment and then discarded a considerable portion of the acquired equipment. But it was operating at much lower costs than the smaller company and even at the price paid was able to grant a substantial immediate reduction in rates. It was apparently not able to obtain the properties at a lower price, but every ground of public policy was in favor of the acquisition. How should these properties be treated in a valuation, at original installation cost less depreciation, or at cost of purchase from the smaller company? How shall we be fair to both investors and the public?

The other items mentioned are of the same general character, involving payments of cash or securities for rights or privileges which at the time may have been legitimately acquired but do not correspond with present recognized policy. As to patents or licenses, valuation at reasonable actual cost is entirely proper, less the amortization for expired life of the rights. But what shall be done where patents were developed by the utility and were used as a basis of large security issues above cost? Likewise securities issued against franchises and contracts above any actual and legitimate cost of acquisition?

Against these items of over-valuation often encountered, we sometimes strike the reverse where through receiverships and reorganization the properties were purchased at much less than fair investment and where subsequently sufficient earning power developed to support the original investment. How shall such properties be appraised, at the foreclosure prices or without regard to such acquisition?

19. Rule of Reason

In all those matters, obviously no rigid rule can be laid down. The last illustration, however, does indicate the more general course most reasonably pursued. The presumption is that if under foreclosure properties were acquired at a sacrifice sale, the subsequent valuation should nevertheless be based upon the prior investment, without regard to the advantage obtained by the purchasers. If this is the reasonable course, then it would seem proper also to disregard all such corresponding items of over-valuation. For the most part, that is probably the only sensible procedure; to recognize existing properties, appraise them at original cost less depreciation and mostly disregard all prior financial complications.

In any event, it is important that all these questions be resolved once for all. The rule of reason must be used, but the results ought to be made permanent.

CHAPTER IX

SYSTEMATIC MAINTENANCE OF THE RATE BASE

1. Items in the appraisal. 2. Importance of reasonable methods. 3. Cooperation of all parties essential. 4. Accounts to be rewritten. 5. Capital stock needs adjustment. 6. Balance sheet illustrated. 7. Adjustment in case of decreased assets. 8. Adjustment in case of increased assets. 9. Control accounts. 10. Net investment shown by accounts. 11. Additions under commission control. 12. Additions may come from earnings. 13. All additions under commission control. 14. Conclusion.

1. Items in the Appraisal

In the last three chapters we have considered the chief factors in an appraisal. We have attempted to set forth the principles which should control. If these principles were adopted no insurmountable difficulty would be met in making a valuation of all public utility properties which would resolve once for all the uncertainties of past investment and establish an unvarying rate base for the future.

In this chapter we shall show the steps to be taken first in establishing such a rate base for existing properties, and then maintaining this rate base, as well as adding increments whenever new investments are subsequently made, all under an exact accounting control.

No attempt will be made to describe in detail the procedure of making an appraisal. This would be a technical, and, to a large extent, clerical matter, readily prescribed by competent engineers and valuation experts. As indicated in a previous chapter, a complete inventory of the different classes of property should be made in each case. This should conform to the accounting classifications prescribed by the commission. As a result there would be uniformity in the valuation reports of all the properties which would serve not only to determine the rate base for each particular property, but to provide a basis for cost comparisons between the different properties.

In such inventories there should appear the quantities of each class of property, showing separately the allowances for labor and materials, and the prices applied to the quantities, to determine the original cost of each class. All the items should be presented in such form as to facilitate comparisons between different properties. This would afford a check against grave errors and prevent relative injustice.

Besides the classification of properties and the unit prices there should appear also the percentage depreciation applicable to each unit or class of property as set up in the inventory. The facts should be complete, so that the quantities, prices and amounts of depreciation appear in the detailed statements which should serve as a permanent record of the work accomplished.

2. Importance of Reasonable Methods

In a large project of this sort, reasonable and practical methods must be employed. The obvious criticism against the proposal to determine the valuation of all utility properties is the huge size of the job, the great complications involved, the long time, and the large costs required.

That the undertaking is large and costly cannot be denied. It is justified, however, because of the definiteness that would be obtained, and because thereafter rate making would be an automatic process. Freed from endless revaluations and litigation the commissions could devote themselves to more positive problems of regulation. We do realize, however, that it would be an easy matter to defeat the purpose of valuation if the processes were carried to the great detail which sometimes occur in valuations. There is no doubt that most appraisals are much more costly than reasonably necessary for accurate and satisfactory results. Usually there is excessive regard for minuteness of detail, which consumes time and rolls up expense without assuring greater correctness in the amounts established. For the sake of justice, there should be accuracy, but this is not enhanced by over refinement and elaborateness in preparing and pricing the inventory. In any event, with the greatest of care, there is an inevitable margin of inaccuracy because of the variability of the numerous elements of labor, materials, wages, prices, depreciation, etc., which enter into the appraisal. Consequently studied minuteness in the inventory does not narrow the margin of error.

In every appraisal it is possible by careful preliminary survey to adopt large units of property basing the inventory upon such units, and not upon the individual minor constituents of each unit. For example in the appraisal of track, it is necessary to know only the different classes of structure and the analyzed cost per foot or mile of each class. The analysis of the unit should be painstaking, then the application to the length of each class of track would be simple arithmetic based upon rapid and easy measurement. It clearly would not be necessary to count and compute separately every spike, bolt, bar, tie, rail, etc.

Similarly in the case of power plant and equipment, we can adopt large units of appraisal without individual regard to the smaller constituent elements. Apart from a general survey of a particular power house to determine the principal classes and numbers of generating units and to study the entire layout in relation to the required output, it would not be necessary to inventory and price separately every part of each generator, nor the great amount of auxiliary apparatus required and connected with each generating set. The larger unit might include the boilers and other steam equipment or even the building itself. With a proper study of the suitableness of the plant to the required output, the whole plant and equipment could be appraised on the basis of general k.w. capacity. There should be a minute and careful analysis of the items entering into the unit in relation to the output requirements and the existing layout. But when this has been determined, with a resulting unit cost per k.w. capacity, no further detailed and minutely elaborated inventory of individual apparatus, with all the setting, piping and connections, is needed. Such elaboration would be costly, would encumber the work, and would be too complicated for ready grasp, all without adding to the accuracy of the appraisal.

In the same way, accurate short cuts can be employed in the appraisal of practically all classes of property. For each class, a detailed study of the unit must be made, with careful consideration of the constituent elements and cost of each. But when once determined, the unit can be applied to all the property of its class without separate listing and pricing of each piece of property which is capable of individual appraisal. The results will be no less accurate and no less fair to the investors or the public. The work, however, would be greatly simplified and expedited, and would be completed within reasonable limits of time and expense.

The purpose is not to define exactly how such reasonable and practical costs of the more essential and controlling units may be determined. We wish only to emphasize that extreme detailed procedure is not justified and that it does delay the work and overwhelms it with cost. Simplification of procedure is necessary and feasible. This can be obtained if the commissions and the companies undertake the job with the purpose of obtaining a reasonable appraisal and cutting through the confusion that has existed hitherto in valuations.

3. Cooperation of All Parties Essential

Our belief is that with the adoption of reasonable methods, all the public utility properties could be appraised and a definite rate base established within a period of say three years.

There would have to be cooperation between all the parties. In the first place, the project would be mostly a state matter [1] and the negotiations and responsibilities would rest with the commission under direct legislative authority. But besides the commissions there should be the fullest cooperation with the municipalities affected and a great deal of the detailed work might be assigned to them. On the companies' side also there would be necessary direct and willing cooperation. If they see the necessity of placing regulation upon a definite basis and realize that there is no purpose of confiscation or undue interference, they would be particularly able to expedite the work and bring about satisfactory results in a surprisingly short time. Their occasional attitude of making appraisals difficult and impracticable has caused a good deal of delay and additional expense in valuations. If, however, the companies are willing, it would be surprising how readily suitable inventories could be established and how soon a reasonable and just appraisal could be made. Cooperation between the different parties is essential.

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[1] The railroads are, of course, being valued by the Interstate Commerce Commission. The railroad valuations should be based on the same principles and policies as other utilities, and the fixed results used for determining the return on investment.

The purpose of the valuation here proposed should be expressly stated—to determine once for all a definite rate base for existing properties. Underlying principles and methods should be adopted, so that the practical appraisal would involve merely their application. All parties would know beforehand what was desired, and would be concerned only with the direct effort of getting the results. There would be no difficulty in completing the job within a reasonable period at a moderate cost. But even if the job should require as long a period as five years, the facts would be established once for all and we should do away with the repetition of valuations and the reconsideration of the same facts time and again without permanent consequence.

4. Accounts to Be Rewritten

After the appraisal in any case is completed, we should not be contented merely with the record, but the official accounts of the company should be rewritten so as to show the facts established by the investigation. In this way, the property or investment accounts would square with the rate base, and the accounts would stand substantially as if the companies had throughout followed the accounting principles and rules prescribed for them by the regulatory authorities. Such a record would greatly facilitate future regulation and would place rate making practically on an automatic basis, showing directly all the cost elements to be contained in the rates.

In rewriting the accounts, we should have throughout a readjustment of all the items which enter into the balance sheet of a corporation. In the case of the assets there would be no difficulties in the adjustment. The previous entries in the various property and asset accounts would be superseded by the gross property costs determined in the appraisal. At the same time, the amount of the computed depreciation would be entered into a special reserve, so that the net investment in the properties, would appear as the original cost of all the rewritten property and asset accounts less the depreciation and the current non-interest bearing liabilities.

A more serious problem of adjustment appears on the other side of the balance sheet, the liabilities or sources of the funds through which the properties and assets were acquired. Usually, however, there would be no difficulty with the so-called current liabilities. These could be readily determined and taken directly from the previous accounts or balance sheet. As explained in the preceding chapter, they would be analyzed and taken into consideration in the determination of working capital.

Nor would there be any obstacle to the ready determination of the various interest-bearing obligations. Usually all the notes and bonds outstanding represent actual investment in the business. Only on rare occasions would the net investment be less than the par value of bonds and interest-bearing obligations outstanding. If, however, in any case the par value of notes and bonds should exceed the net valuation, adjustments in the accounts would have to be made as explained below.

5. Capital Stock Needs Adjustment

The major difficulty in the adjustments would come in treating the capital stock outstanding. This, as in the case of bonds and notes, for the most part, appears at a par value [2] and is entered in the accounts at this amount without regard to the fact whether it represented actual investment at the time of issue, or whether subsequently the amount of the investment was maintained. If the amount of stock outstanding and the surplus indicated by the accounts added to the notes and bonds outstanding, exceed the net valuation, adjustments must be made to bring the revised accounts or balance sheet into conformity with the net results of the appraisal.

In case the total securities, including capital stock outstanding, exceed the net appraisal, the best adjustment would be to reissue the securities so as to agree with the amount of the valuation on which a return would be allowed. To the extent that such valuation is covered by notes and bonds outstanding, no changes in the accounts would be required. But the capital stock account should be adjusted so as not to exceed its net equity in the valuation. To make this adjustment direct and definite, the existing amount of capital stock should be replaced with an amount equal to the net equity of the stockholders in the investment. If, for example, $10,000,000 of par value capital stock were outstanding, while its net equity in the valuation entitled to a return proved to be only $5,000,000, then the earning power, in any event, would be limited to $5,000,000 and the simplicity of accounting would be enhanced if the amount of the stock were reduced to the same amount allowed in the rate base by the regulating body.

Such reduction in the capital stock would, of course, not affect its real value, nor the relative value held by the different owners. The same number of shares outstanding could be continued, but the par value of each share would be reduced to the extent of bringing the total par value to the net earning value included in the rate base.

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[2] In the case of a comparatively few utilities there has been introduced lately capital stock of no par value. Whatever advantage may be found in securities of no par value, this would not pertain to utility securities, if the latter are to yield a definite return, as proposed in our plan.

If the securities issued were thus adjusted to the rate base, the accounting control for the future would be subsequently facilitated. The initial valuation would be shown immediately by the amount of the securities, and, as will appear later, all additional investments would be indicated by further securities authorized and issued, and thus throughout the rate base entitled to a return would be shown by the securities outstanding. This would be a definite sum readily ascertainable, without confusion, and would stand out as a self-evident amount in any published balance sheet.

6. Balance Sheet Illustrated

In most cases, however, the existing stockholders would probably not consent to a readjustment of their holdings to conform to the net earning value established by the appraisal. Moreover, it would probably be undesirable to bring legislative action to compel a revision. While the readjustment would facilitate the accounting control, the same results can be readily obtained by special accounting provisions. For the sake of definiteness, we shall show the possible procedure where the net valuation is less than the total amount of notes, bonds, capital stock and surplus, and also where it is greater.

Let us assume that the valuation in a given case was cost of fixed capital $18,500,000, depreciation $3,800,000, working capital $300,000; net valuation or fixed rate base $15,000,000; but that the notes and bonds outstanding are $10,000,000, the par value of capital stock $10,000,000 and an indicated surplus of $5,000,000; an excess of total securities of $5,000,000 above the new rate base. The balance sheet prior to the rewriting of accounts was as follows:

BALANCE SHEET 1

(Before accounts are rewritten)

Assets Side

Current assets		$ 1,450,000
Cash	$ 300,000	
Special deposits	100,000	
Accounts receivable	350,000	
Materials and supplies	700,000	
Land, construction and equipment		24,700,000
Total assets		$26,150,000

Liabilities Side

Unfunded debt		$ 1,150,000
Taxes accrued	$ 200,000	
Interest accrued	250,000	
Wages & salaries accrued	25,000	
Bills payable	675,000	
Funded debt		10,000,000
Notes	$ 2,000,000	
Bonds	8,000,000	
Capital stock		10,000,000
Surplus		5,000,000
Total liabilities		$26,150,000

In the readjustment of accounts we would leave undisturbed the total of $10,000,000 of notes and bonds outstanding. But with a net valuation of only $15,000,000, we should have a remaining earning value of only $5,000,000 above the bonds and notes applicable to a total $10,000,000 par value of capital stock and $5,000,000 indicated surplus. Consequently, the total surplus would be automatically wiped out, and would disappear from the accounts without any special problem. But if the par value of capital stock could not be reduced to its equity of $5,000,000 in the rate base, it would have to be continued in the accounts or the balance sheet at the full par value of $10,000,000; twice its recognized amount in the rate base.

If, then, the asset or property accounts are rewritten on the basis of the valuation, with a net appraisal of $15,000,000, and if at the same time the notes and bonds are entered at $10,000,000, also the full par value of $10,000,000 capital stock, we have a deficiency of $5,000,000 on the asset side of the balance sheet. This is due to the excess of par value of the capital stock outstanding over its share in the rate base established through the appraisal. This excess can be indicated on the asset side of the balance sheet to offset the excessive amount shown in the capital stock. Such an offset on the asset side under the general title "Valuation Adjustment" would indicate immediately, in a single sum, the amount of the capital stock in excess of the net earning value fixed for the properties.

7. Adjustment in Case of Decreased Assets

In the revision and adjustment of accounts, the rate base established would be shown either (1) by the sum of the property and asset accounts, less the computed depreciation and current non-interest bearing liabilities; or (2) by the notes and bonds and capital stock outstanding, less the sum in the Valuation Adjustment Account presented on the asset side of the balance sheet. With a clear understanding of the accounting principles involved, there would be no difficulty in showing instantly what the amount of the rate base would be as a result of the valuation. The rewritten balance sheet would appear as follows:

BALANCE SHEET 2A

(Rewritten accounts show reduced equity in stock)

Assets Side		
Current assets		$ 1,450,000
Cash	$ 300,000	
Special deposits	100,000	
Accounts receivable	350,000	
Materials and supplies	700,000	
Fixed capital net		14,700,000
Land	$ 500,000	
Buildings	2,300,000	
Equipment	15,700,000	
Total	$18,500,000	
Less accrued depreciation	3,800,000	
Valuation adjustment		5,000,000
Total assets side		$21,150,000
Total net capital or rate base		$15,000,000
Liabilities Side		
Unfunded debt		$ 1,150,000
Taxes accrued	$ 200,000	
Interest accrued	250,000	
Wages & salaries accrued	25,000	
Bills payable	675,000	
Funded debt		10,000,000
Notes	$ 2,000,000	
Bonds	8,000,000	
Capital stock		10,000,000
Total liabilities side		$21,150,000
Total investment		$15,000,000

This balance sheet now shows the facts as required for the purpose of rate making. On the assets side, all the properties are entered at their determined cost. From the total current assets are deducted the current liabilities, and from the fixed assets depreciation is deducted, giving a total net capital as rate base $15,000,-

000. Likewise from the other side of the balance sheet, we have total notes, bonds and capital stock $20,000,000, with a valuation deduction of $5,000,000, giving net capital for the determination of return amounting to $15,000,000. These amounts are entered in the accounts and will remain as a continuous record for future rate making. For the future the $15,000,000 of net capital is to be maintained through adequate maintenance and depreciation to be paid for by rates charged for service, and will be increased only by actual additional investment in properties used for service.

8. ADJUSTMENT IN CASE OF INCREASED ASSETS

The preceding balance sheets represent a case where the valuation disclosed excessive book costs and a condition of overcapitalization, with the adjustment of accounts to the results of the appraisal. A similar adjustment would be effected if the net valuation exceeds the assets previously shown in the accounts of the corporation. While such cases may not be numerous, they probably would appear, and provisions would have to be made in the adjustments of the accounts.

These cases represent the somewhat unusual policy of some corporations to build up their properties through long periods by charging improvements and additions to operating expenses and thus creating so-called hidden reserves. If a company makes a practice of charging to maintenance items which properly should be included in property accounts, there is a gradual understatement of the properties and a corresponding overstatement of maintenance expenses. The annual net income of the company as well as the real investment in the properties is understated. There is gradually an accumulation of surplus which is not shown in the accounts and invested in properties not shown among the assets of the company.

In such a case, the adjustment of the property accounts would leave a balance after all of the notes and bonds and capital stock outstanding have been entered into the accounts. The net investment would thus be greater than the total amount of securities outstanding together with the existing showing of surplus. This difference may be added directly to the surplus, or perhaps, preferably, it may be set up as a separate item, Valuation Adjustment, on the right hand side of the balance sheet. This would represent in a single sum the amount in the rate base added to the equities previously shown to the credit of the stockholders. It would resemble the adjustment on the opposite side where the net investment is less than the securities outstanding. The following is the balance sheet after the rewriting of the accounts, starting with the same book values as in the preceding case, but having larger appraisal figures:

BALANCE SHEET 2B

(Rewritten accounts show increased equity in stock)

Assets Side

Current assets		$ 1,450,000
Cash	$ 300,000	
Special deposits	100,000	
Accounts receivable	350,000	
Materials and supplies	700,000	
Fixed capital net		29,700,000
Land	$ 2,000,000	
Buildings	6,500,000	
Equipment	29,700,000	
Total	$38,200,000	
Less accrued depreciation	8,500,000	
Total assets side		31,150,000
Total net capital or rate base		$30,000,000

Liabilities Side

Unfunded debt		$ 1,150,000
Taxes accrued	$ 200,000	
Interest accrued	250,000	
Wages & salaries accrued	25,000	
Bills payable	675,000	
Funded debt		10,000,000
Notes	$ 2,000,000	
Bonds	8,000,000	
Capital stock		10,000,000
Surplus		5,000,000
Valuation adjustment		5,000,000
Total liabilities side		$31,150,000
Total investment		$30,000,000

As in the preceding case, the new balance sheet shows directly the figures used for the rate base. But here the fixed property accounts were written up from a gross cost of $24,700,000 to $38,200,000 but were diminished by a depreciation reserve stated at $8,500,000 with a net increase of $5,000,000. And this net addition to the net fixed capital, is shown on the other side under "Valuation Adjustment." The fact is clear that the net capital or rate base is $30,000,000. This remains as a permanent figure to be maintained through repairs and provision for depreciation, and to be increased only with net additional investment.

9. CONTROL ACCOUNTS

In any event, in the rewriting of the accounts, it is desirable to show in a single sum the full amount of the rate base established through the valuation. Consequently, after the various individual property and asset accounts have been rewritten, with the corresponding adjustment of the accounts as described above, it would be desirable to enter besides a single control account, which would give in one item the net amount of the rate base.

In the adjustments previously discussed, there would be a complete balancing account established. After such complete adjustments have been made, the single further entries required would be to place on both sides of the balance sheet the net results of the valuation. On the asset side, this would represent the net value of the properties established through the appraisal, while on the opposite side would appear the off-setting sum under the title of investment in properties as determined by the appraisal.

These, it must be understood, are mere control accounts. Their single purpose would be to show, in one net sum, the results of the valuation; otherwise, to determine the rate base fixed by the appraisal, it would require an analysis either of the asset accounts or of the liabilities and capital stock outstanding. By far the simpler procedure is to have summary and control accounts to show the desired amount in a single item on each side of the balance sheet. These control accounts are presented in the adjusted balance sheets given above.

10. Net Investment Shown by Accounts

After the accounts have been rewritten, as described in the preceding sections, the rate base applicable to existing properties appears definitely in the accounts and constitutes a permanent record. Thereafter, the rate base will be permanently under accounting control and the amount of investment entitled to a return can be readily ascertained at any point of time.

In keeping the permanent future rate base, provision must be made for the continuous maintenance of the properties. This would require that besides ordinary repairs and minor renewals, adequate provisions shall be made for depreciation. From the time of the accounting readjustments, full regular charges should be made to operating expenses on account of further depreciation of properties and the corresponding amounts should be credited or added to the depreciation reserve. This, as already explained, would result automatically in locking up in the business an amount of cash or other assets equal to the amount of the depreciation charged to operating expenses and added to the reserve. In this way, the depreciation reserve would show the continuous accumulation through charges to operating expenses of the factor of depreciation.

As new subsequent properties are added, the cost, under the commission's control, would be included in the appropriate property or fixed capital accounts. Each such fixed capital account would be charged with the cost of the new property installations authorized by the commission, and throughout, as operation continues, charges for depreciation in reference to such property would be made to operating expenses, with the corresponding accumulation of reserve and locking up of assets in the business. Then, as units of property are retired, the original cost, as determined in the initial valuation, or by subsequent actual costs, would be deducted from the appropriate property account and likewise deducted from the depreciation reserve. For the future, therefore, there would be a definite record of additions and withdrawals from any property account, and there would be recorded the accumulation of depreciation reserves according to the charges to operating costs. Consequently, at any time, the net investment entitled to a return would be the total amounts of the property and asset accounts, less the total amount of the depreciation reserve and the current non-interest bearing liabilities outstanding. The same showing, however, would be made if on the other side of the balance sheet, we take the notes and bonds outstanding, together with the capital stock, and surplus including the Valuation Adjustment made in connection with the initial appraisal. If the control accounts are kept, such additional investment as made would be added to the account on each side of the balance sheet. At every point the accounts would show definitely the amount of the rate base. The additions to the property accounts from time to time should have the prior approval of the commission, both as to the desirability of the construction or changes intended, and as to the reasonableness and propriety of the costs charged to the account. Under this procedure, there could be no question at any time as to the amount on which the investors are entitled to a return. Moreover, the rate base as thus determined, would be coupled up consistently with the policy of charging depreciation to operating costs. There would be no possibility of giving the investors an advantage in accumulating an excessive depreciation reserve, nor would the investors be penalized if for a short period of time the reserves should be inadequate. The purpose would be to eliminate any cause of dispute as to the amount of the investment, the rights of the investors, and the obligations of the consumers.

11. Additions Under Commission Control

The additional investment, after the initial valuation and adjustment of accounts, would be made through the issuance of securities and particularly bonds. Consequently, the regulation of security issues, the control of accounting for additions and improvements, the charges for repairs and depreciation, and the maintenance of the permanent rate base would all constitute a unified control policy.

For the most part, the issuance of new securities, would involve immediately and directly additional investment for the public service. In fact, new securities should not be authorized except for additional investment or for the proper refunding of previously existing securities. Consequently, as applications are made for new security issues, the commissions should make the proper investigation to determine their reasonableness. If the securities are for the purpose of new investment, then, as the bonds or stocks are actually issued, the cash funds should be safeguarded under the accounting control of the commission so as to be available only for the construction or addition of new property within the purposes of the issue. In this way, there would be full control in behalf of the public; the amount of the securities issued would constitute the addition to the investment. This would be a definite figure beyond dispute and would appear automatically in the accounts. And it would be added as a single sum to the control account so that at each point the total net investment entitled to return would be shown by the balance of a single account.[3]

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[3] For an exact statement of the investment on the basis of which the return is computed for the cost of service, the amount would be shown in the first instance by the par value of the security, less the discount, or plus the premium and subsequently, at any point, the net investment would be the par of the securities less the unamortized discount, or plus the remaining premium. As to the control account, likewise an exact statement would show at any point the exact investment to correspond with the balance sheet accounts, so that the net proceeds of a security issue would be entered and subsequently additions would be made periodically with the amortization of discount and subtraction for the writing down of premiums. But, for practical purposes, this refinement would scarcely be necessary; the facts would be sufficiently presented for control purposes if the par value of the securities are entered as they are authorized and issued. The actual computation of the return would be based on the real facts, as will appear in the next chapter.

As construction or the installation of property proceeds, the commission's engineers and inspectors should be in close contact, so that the work throughout shall be properly done in the most economical way. Moreover, there should be scrutiny of the propriety of the costs incurred. While the additional investment should be measured by actual costs, the amounts should be reasonable and all unnecessary expenditures should be avoided. For this purpose, the closest cooperation should be maintained between the commission and the companies. And before any permanent additions are entered in the accounts for property construction or installation, the approval of the reasonableness of the expenditure should first be obtained from the commission based upon the certification of the engineers or competent inspectors.

By this suggested procedure, when an expenditure has once been entered into an account, there would be no further question between the public and the companies as to the validity of the expenditures and the right of the companies to a return. The purpose, however, would not be to interfere unnecessarily with the judgment and discretion of the company. There should be reasonable freedom and elasticity of action, and the management should not be impeded in the work of construction and installation of property. But, at the same time, there should be sufficiently close public contact, so that the reasonableness of the expenditure is determined as construction and installation proceed. And when the entires are once made in the accounts they should stand definitely as fixed sums, without possibility of future dispute.

Since additional investment would be made mostly through the issuance of securities, it would be desirable, after the initial valuation and the readjustment of the accounts, to segregate from then on, all the new securities issued for the purposes of investment. This could be readily done so that the amount of the securities issued would appear in clear separate accounts and would show the additional investment made since the time of the initial valuation. This sum added to the initial valuation, would give the amount of the total investment entitled to a return at any particular time. And as securities are issued for additions, the amounts would be added to the investment entitled to a return.

12. Additions May Come from Earnings

While for the most part additional investment would be made through the issuance of new securities, the plan of control should be sufficiently elastic to allow for additions made in any convenient and workable way. The paramount purpose should be to show definitely by the accounts what the additions are, no matter through what source they are provided. Consequently, while additions can be most readily indicated when they are financed directly through the issuance of securities, nevertheless, the same definiteness can be and should be maintained through whatever source the funds are obtained. The fundamental purpose is to make all additions to the investment stand forth clearly in the accounts.

But if such a definite policy of regulation were instituted, there would be very little additional investment made through surplus accumulated out of the return allowed. This would be a fixed and definite sum, as will be brought out in the following chapter. It would be directly related to the investment and would be sufficient merely to support the amount. Consequently, it would furnish little or no inducement for the stockholders to leave any portion in the business to be reinvested in properties. For the most part, the returns allowed above fixed charges would probably be distributed as dividends, and very little would be left as accumulated surplus to be reinvested in properties.

Nevertheless, the system of accounting and methods of control should provide sufficient elasticity to permit the reinvestment of the return. The company, at the close of any fiscal period, should be free to distribute the full amount of the earned return available for dividends, or retain all or part of it to be reinvested in the properties. But the reinvestment of earnings should not be left in an undefined and haphazard form. It should be based upon deliberate and definite action of the company. The mere incidental retention of surplus for a short period of time, should not be the basis of an additional return to the owners. This applies particularly to the holding of funds accumulated out of earnings until the periodical payment of interest or the distribution of dividends. But, if during a certain period there has been an earned return, and if any part is voted by the directors to be reinvested in the business, this action, with the approval of the commission, should constitute a recognized additional investment precisely as if there had been an authorization of additional security issues. Such investment of earnings should not be available subsequently for dividend payment. Then the expenditure of the funds would be subject to the commission's approval and would be safeguarded in exactly the same way as in the issuance of securities. When the funds have been expended and the costs entered into the property accounts, there should then be no further questions as to the validity of the amounts entitled to a return.

13. All Additions Under Commission Control

Under present conditions a large proportion of new capital improvements is made without the prior approval of the commissions as to the desirability of the projects and without immediate supervision as to costs. The statutes usually provide for commission supervision over additions only indirectly through control of new security issues. If improvements are directly financed by means of such issues, the prior authorization of the commission is necessary. Before approving the new securities, the company must show the desirability of the proposed projects, and when the funds are finally obtained the commission must see to it that they are expended exclusively for the purposes set forth in the order of approval.

But often new construction is financed by means of short term notes, bank loans or treasury funds, none of which is under commission control. Thus, the additions are not passed upon either as to their desirability or as to the reasonableness of the costs. After the work has been completed, the company petitions the regulatory body to permit a new security issue for the purpose of paying the short term notes, or the bank loans, or reimbursing the treasury for funds previously expended. It is true that in connection with this petition the commission usually investigates the need of the new facilities and the propriety of the expenditures. But at best this can be done only superficially after the expenditures have been made. Besides, there is the additional hesitation to embarrass the utility financially by disallowing such an issue, even if some items in the expenditures already made would not have obtained a prior approval.

By far the better way, therefore, would be for the future to require direct cooperation between the companies and the commission for construction and improvement prior to any expenditures. There is no reason why the companies, with the commission's engineers, should not work out beforehand a construction program on its merits and receive the prior approval of the commission. When such a program has been approved for a year or other period, the company could proceed with the installation and pay for it in any way by which funds can be most readily secured. If the financing should be directly and immediately through bond issues, the new issue would represent the additional investment. If, however, it should be through temporary note issues or even bank credit, the amount would be established and would be recognized in the accounts as definitely as if securities had been directly issued for the construction purposes.

In case of temporary financing, the final issues of bonds or capital stock would appear as a readjustment of notes or bank loans previously authorized. In any event, however, the important thing is that the public interest be adequately recognized in planning new facilities and in establishing a construction program. Further, there should be direct determination of the costs, with the commission's approval, so that when expenditures are once entered into the accounts, whatever the immediate source of the funds, there should be no dispute as to the right of the companies or the obligations of the public. This should be shown by the accounts, whatever the form of temporary or permanent financing. Only in this manner could the public interest be adequately safeguarded.

14. Conclusion

The purpose of this chapter has been to show that after the appraisal of the existing properties has been made and the accounts have been rewritten to present the initial valuation, then subsequently all additional investment can be readily determined and the rate base constantly maintained at a definite figure. There would be no more disputes over valuations, for the rate base would be shown clearly by the accounts.

The systematic maintenance of the rate base, however, is only one step in the determination of the return allowed to the investors. It is finally the return itself which constitutes a cost element in rates; the investment or rate base is merely the sum on which the return is computed. Consequently, to fix the return we must have not only a definite rate base but also a definite rate of return not subject to fluctuation or dispute. Both factors are variable under present methods of rate making and both must be fixed and placed under accounting control for effective regulation. The following chapter, therefore, will be devoted to the basis and method of determining an exact rate of return.

CHAPTER X

THE RATE OF RETURN

1. Cost of capital employed. 2. Return on existing investment main problem. 3. Fixed rate essential. 4. Seven per cent equitable rate. 5. Changing rate for future unworkable. 6. Market rate controls. 7. Return mostly fixed by contract. 8. Same terms control over long periods. 9. Discount and premium automatic return adjustments. 10. Bonds and preferred stock bear definite rate. 11. Common stock practice needs modification. 12. Common stock negligible factor. 13. Conclusion.

1. Cost of Capital Employed

Of the two undefined factors in the formula "fair return on fair value," we have developed a definition and machinery by which "fair value" becomes an exact amount constantly ascertainable. We have shown that the only rate base suitable for regulation is the net cost of the properties. Cost is the sole "value" which does not alter and is subject to exact accounting control.

Likewise the other factor in the formula should be definitely fixed and controlled by exact accounting. Again cost is the only unvarying and controllable basis by which to measure the return. It should be the amount actually demanded by investors to provide funds. The amount expected or agreed upon constitutes a specific element of cost exactly as the expenses for labor, materials and depreciation enter into the cost of operation. In this chapter, therefore, we shall be concerned with the determination of the rate of return which when applied to the rate base fixes the amount of return.

Throughout our consideration of the rate or amount of return, we shall have in mind, primarily, the actual cost of obtaining capital. We shall separate the discussion, as with the rate base, into return on existing properties at the time of the valuation, and that on subsequent investment. What we are seeking, however, in either case, is the reasonable cost actually incurred to provide the service.

2. Return on Existing Investment Main Problem

As to existing investment, the question is what was the rate of return demanded, or reasonably expected, by the investors, not what would be necessary now under different circumstances. What we are seeking is the rate agreed upon when the capital was turned over to public use. We have to do with actual or *quasi* contracts between the public and the investors. It is the explicit or implied terms of these contracts which should determine the return.

But while the approach is that of a simple cost determination, for the most part the records are not clear and the desired rate of return representing such cost is not available except in comparatively few cases. Our problem of fixing the rate of return upon existing investment is, therefore, similar to determining the amount of the investment itself. We must make the most reasonable estimate possible and once for all eliminate the uncertainties of the past.

3. Fixed Rate Essential

There have been wide differences of opinion between public authorities and the companies as to what constitutes a proper rate of return. Even among the commissions themselves or among courts, there has been a wide range in the rate allowed. Some have considered 6% as fair, while others allowed as much as 8%, so that the higher rate would yield a third more than the lower. Under such conditions there has been a constant tendency toward dispute and litigation. Unfortunately the facts are not clear enough to determine in any case with precision what percentage should be allowed upon the fixed rate base. But this factor of uncertainty must be eliminated for the future if we are to exercise workable rate regulation. The rate of return must be equally definite with the rate base for effective public control.

Our proposal is that a single rate of return should be fixed once for all upon the existing investment of each company as determined by the initial valuation. In establishing this rate, due consideration should be given to the conditions controlling the development of the properties. Nevertheless a uniform rate, reasonably and fairly determined for all of the companies, would probably serve most satisfactorily. Such a single uniform percentage could be applied with least difficulty. If differences between companies are recognized by the commissions, then a great many arbitrary or unimportant distinctions would be drawn, and a decision would be complicated by the variety and contrariety of facts injected into the question.

While a single uniform percentage for all companies is not absolutely essential, it would expedite greatly the establishment of systematic rate regulation. But if differences must be recognized between individual companies, as may prove to be necessary in the face of widely different conditions, there should be a single determination for each company so that no further variation would arise in the future. If for a given property, it would appear that a 6% return on the total net investment determined in the valuation is reasonable, this should continue permanently as the rate of return on the existing investment. We should then have a definite rate upon a definite sum established by appraisal, so that the amount of the return included in the cost of operation would not be subject to further variation, uncertainty and dispute. The rights of the companies and the obligations of the consumers would be fixed. We should have an exact cost element for the future, subject to automatic accounting control.

4. Seven Per Cent Equitable Rate

The entire subject of rate of return is a matter for determination by the commissions under proper legislative authority. Local conditions would largely control in their decision as to whether a uniform single rate should be applied to the net past investment of all utilities or whether specific rates should be allowed in individual properties. In general it would seem that an attempt to employ varying rates in accordance with the specific conditions under which funds were procured in the various enterprises, would hardly be practicable. Effort at extreme refinement would most likely add little to the justice of the result.

In practically all cases the investment is divided between bonds and stocks. There has been, of course, wide variation in past rates of either security, depending upon the special conditions of the particular issues, and upon the relative proportion of bonds and stocks floated. Usually, however, the rate on bonds has ranged from 5% to 6% and on stocks from 7% to 9%.

In view of present financial conditions and past uncertainties, a 7% return applied to existing net investment in all utility properties would seem to be reasonable. Such a rate would approximate justice to all concerned. The portion of investment represented by bonds would in any event be limited to the rate stipulated in the bond; usually between 5% and 6%, thus allowing a sufficient return to the stockholders. Suppose we appraise the property of a company whose securities consist of equal amounts in bonds and stocks. Then a reasonable assumption would be that the bonds were issued on a 6% basis and the stock to bring a return of 8%. A 7% allowance on all of the property would provide for the 6% interest and 8% dividend, and both classes of security would be treated in accordance with the fair expectations of the investors.

But assume that the investment is divided into 75% bonds and only 25% capital stock, then both the required interest on the bonds and the expected return on the stock would be higher, and in the aggregate the 7% on the total investment would still be reasonable. After the interest payment, enough would be left to pay slightly over 8% on the stock investment.

Where, however, the conditions are materially different from the assumptions just made, it would be extremely difficult either to justify a substantial reduction below or an increase above the general 7% on the total net investment. Where, for example, a materially higher rate for bonds was required than the 6% assumed, the reason would probably be found in the larger proportion of bond investment, or in the overcapitalization of the properties or in mismanagement which proved adverse to the credit of the company. The question then is, to what extent should future consumers be penalized for financial mismanagement in the past? If, on the other hand, bonds have been issued at a substantially lower rate than 6% this would probably be due to a lower proportion of bond investment or to special excellence of management; and in either case it would not be unreasonable to allow the company some advantage on the stock investment. Whatever adjustments in the abstract might seem desirable, when the commission faces the problem of fixing the rate of return it would probably find that a single rate of 7% upon the various investments is reasonable and would greatly simplify the procedure of placing all properties under systematic rate control for the future.

In any event, whether a uniform rate of return be adopted for all the properties, or whether differentiation may be desirable according to conditions of the various properties, a rate of return should be fixed in each case which would stand permanently against the existing investment established through the initial valuation. Thus the amount of return on present investment to be included as a cost element in future service, would be definitely determined, subject to future accounting control.

5. Changing Rate for Future Unworkable

As to subsequent additional investments, the actual rate and amount of the return required can be easily determined. If the proposed policy is adopted, the requirements would be definite and the return would be as exact and beyond dispute as the cost of materials and supplies consumed in the service.

In considering future additional investment at any point as new capital is required, the rate of return allowed would correspond to the market conditions of the time. We must recognize that we cannot transcend the market requirements. We are bound by them and if we wish additional investments, we must pay the return required by the people who furnish the funds. This fact cannot be avoided.

There has been a great deal of confusion in past discussion as to what constitutes the return required. The idea found frequently is that there should be an adjustment throughout on all the preceding investment to correspond with the rate of return that would be required if securities were to be issued at the moment when rates are fixed. This idea corresponds roughly to the cost of reproduction basis of valuation; that with shifting conditions in the market, either as to price level or rate of return, the change should be recognized as applying to the entire investment at any point where the rates are to be fixed.

If this view were adopted for future rate making, the entire valuation would be subjected to constant fluctuation according to the change in price level and, correspondingly, the rate of return on the shifting amount would be subject to variation according to the change in interest rate fixed on the investment market. Our view is that regulation with the two fundamental factors in fluctuation, would be practically an impossibility. There could be no accounting control, and at every point there would be a double set of variations, with difficult redetermination of the facts and with endless dispute in reaching agreement on the facts. The only way by which rate making can be put upon a systematic and workable basis is to have all factors definitely determined, based upon the cost actually incurred, and placed under accounting control. If the return actually demanded by those who furnish capital, is allowed in the rates as paid to the security holders, then this is all that is necessary. Investors should get what they expected; neither more nor less. The return would become virtually a contractual matter.

6. Market Rate Controls

For the future, we should be perfectly clear that we cannot escape the market requirements in obtaining capital. We must pay the interest or rate of return that will be required. But, let it be equally clear that this does not require, at any point, a readjustment of return on past investments. It applies only at the time the funds are obtained.

If a given company now needs $10,000,000, it must meet the present requirements as to a return, and none of the existing investment will be affected by the rate that must be paid for the new money. If the market at the moment calls for 6% on the particular form of securities offered, it must be paid, and fixes once for all the cost of future return payable upon the new $10,000,000, unless it is refunded on another basis. If subsequently, further funds are needed and the interest rate has declined, the reduction does not change the rate payable on the preceding $10,000,000 and in turn will not be affected by another rate when still more capital is to be provided later. At any point, the rate of return on new investment is a fixed element in the market that cannot be avoided, and it remains fixed for the lifetime of the security. But it applies strictly only to the particular transaction and does not alter the equally fixed rates placed upon all the successive investments. At every point the particular conditions control and the investors will provide the necessary funds, if they have the assurance, through the rate-making machinery, that they will actually receive the return agreed upon.

7. Return Mostly Fixed by Contract

The bulk of public utility investments are represented by bond issues. This is even more likely to be the case in the future, especially if the proposed plan of regulation is adopted. Consequently, to the extent that bonds are employed for future financing of public utilities, the rate of return is definitely determined at the time of the issue and is fixed for the lifetime of the bonds. It is not further affected by any change in market conditions which may for subsequent issues require a higher or a lower rate of interest. It represents the cost actually incurred in connection with the issue, and should be included in the cost of operation paid by the consumers through the rates charged for service.

The fact, of course, is clear that a bond represents a definite amount of money furnished the corporation; the latter in turn promises to pay back a fixed principal sum at the maturity of the bond, and in the meanwhile to pay a specified rate of interest on its face value. In this way every payment to be made to the investor by the corporation is an exact cash sum determined by contract. When the bonds have been issued, the terms control and no modification is made unless there is a subsequent refunding or readjustment of the agreement between the bondholder and the corporation.

8. Same Terms Control Over Long Periods

The prevailing method of issuing bonds fits exactly with the ideas here presented, making the control of the return a simple accounting matter. Usually there is a large mortgage authorized covering all or specified properties of the corporation. Not all the bonds provided for by the mortgage are issued at once; they are sold as funds are actually needed for the successive improvements and extensions of the business. But the terms of the mortgage and of the bonds issued under it are definitely fixed. Consequently, all the bonds, even if issued successively over a long period of time, impose the same cash liabilities upon the corporation. All bear the same maturity and interest.

For illustration, a large corporation creates a $100,000,000 mortgage, with all of the bonds bearing an interest rate of 5% upon the face value, and all maturing at the same time, fifty years from the date of the mortgage. The corporation then sells its bonds as the moneys are actually needed for the development of the business. Assume that to start with $25,000,000 par value of bonds is issued. This would impose a definite obligation of 5% a year upon $25,000,000 for fifty years. The annual interest cost, or return, is then a definite sum beyond dispute and subject to accounting control; $1,250,000 during the life of the bonds.

Subsequently as more funds are needed for extensions and improvements, more bonds will be issued. At every point, however, each bond will represent a definite contract of the same terms as all the bonds provided under the mortgage. In every instance, the liability of the corporation, both as to annual interest payments and final principal, is fixed by contract. If at any point as the bonds are issued, the approval of the commission is obtained and the purposes are declared valid, then, the return to be paid by the consumers in the cost of service is exactly determined for the future in terms of dollars, without any adjustment for subsequent change in the purchasing power of money or shift in the market rate of interest.

9. Discount and Premium Automatic Return Adjustments

An important point to be considered in connection with the successive bond issues is the automatic adjustment to the shifting market rate of interest, even though the rate of interest on the par value of the bonds is the same on all and remains fixed throughout their life.

This adjustment is made through the issuance of the bonds at a so-called premium or discount; the corporation receives more or less than the par value of the bonds according as the market rate of interest is less or greater than the rate fixed on the par value. Let us assume that when the mortgage was issued and the first $25,000,000 of bonds were placed on the market, the 5% rate fixed for all the bonds corresponded at the time to the market rate of interest. Whenever the so-called nominal rate of interest fixed on the face of the bond is equal to the market rate, the bonds sell at par and the corporation obtains the full amount of cash equal to the face value without premium or discount. Then the net interest burden placed on the corporation and paid by the consumer is fixed directly by the nominal rate on the par amount of the bonds.

Subsequently, however, as conditions change, the market rate of interest may be greater or less than the nominal 5% fixed in the bond. The nominal rate, however, would remain constant, and the adjustment to the market rate would be made through the so-called discount or premium at which the bonds are sold. If the market rate is greater there is a discount, or the bonds bring less than the par value; if the market rate is less, there is a premium, or the bonds are sold for more than par.

Let us assume that ten years after the original issue of $25,000,000, an additional $10,000,000 was sold when the market rate of interest had advanced from 5% to 6%. To make up this increase, the investors paid an amount for the bonds correspondingly less than par. In other words, the bonds were sold at a discount sufficiently less than par to bring the new bondholders for the remaining life of the bonds a full 6% upon their actual cash investment instead of the 5% fixed on the face value. The discount is the automatic equalizer between the market rate and the lower nominal rate of interest.

In the particular case assumed, when $10,000,000 par value of 5% bonds were issued on a 6% basis of return to investors, the corporation obtained actually only $8,500,000. The difference between this sum and the $10,000,000 par value is the discount due to the inadequacy of the nominal compared with the market rate. The obligation of the corporation, however, was to pay 5% a year on $10,000,000 together with the $10,000,000 at the end of forty years, although only $8,500,000 had been received as direct investment. In this way the bondholders get 6% on their original investment, with compound interest on the delayed portion of the payment to maturity of the bonds.

At the time of issue the full $10,000,000 par value of the bonds would be shown on the liability side of the balance sheet as the source of the funds; on the assets side would appear the $8,500,000 actual cash received and at the same time there would be shown $1,500,000 as the amount of the discount. Subsequently year by year, the 5% on the $10,000,000 would be paid, and the discount would be gradually amortized and with the direct interest charged off against income, so that the 5% payment, together with the annual amortization of discount, would pay the 6% on the investment, with compound interest on the delayed payments. At maturity of the bonds the full discount will have been amortized, so that the company would have paid throughout 6% on the investment; the payment of the final $10,000,000 would include the original investment plus $1,500,000 amortized discount which would represent the delayed interest payments with compound interest. All these items are definite sums and would be shown beyond dispute in the accounts of the corporation. At the time of the issue, therefore, the future cost to be placed on the consumer, is definitely fixed and subject to automatic accounting control.

The same principles control where the market rate of interest goes below the nominal rate fixed by the terms of the bonds, except that subsequent issues would be sold at a premium instead of a discount. Then gradually during the lifetime of the bond, the excessive nominal interest above the market rate controlling at the time of the issue, would be used to counterbalance and amortize the amount of the premium received through the issue. In the same way, then, the premium and its gradual amortization during the lifetime of the bond would equalize the nominal with the market rate at the time of the issue. The higher annual interest payments would cover not only the market interest but would gradually reduce the amount of the principal returned at the maturity of the bonds.

To illustrate, let us suppose that twenty years after the general mortgage was executed $10,000,000 face value bonds were issued when the market rate of interest was 4½% instead of the 5% fixed by the bonds, which then had still thirty years to run. Consequently, the $10,000,000 par value brought to the corporation $10,800,000 in cash. This sum was entered among the assets, and on the other side of the balance sheet was shown the face value of the bonds together with the premium of $800,000. Subsequently, the corporation paid 5% a year upon the face value, but from this had to be deducted the annual proportionate part of the premium amortization. Therefore, the 5% a year, less this amortization, brought 4½% upon the investment; the amount of the amortization constituted payment of the principal to the investors, providing during the life of the bonds for the absorption of the premium.

All these facts are definitely determined at the time of the issue and would impose for the full thirty years a 4½% return to be paid by the corporation. This would not be affected by any subsequent variation in interest rates when further bonds had to be issued as time went on, and would determine the cost to be borne by consumers. And, particularly, would not affect the original 5% and the later 6% paid on the prior issues.

10. Bonds and Preferred Stock Bear Definite Rate

It is clear, therefore, that in so far as future investments are made through bond issues, there would be complete and automatic control of the return paid to the investors.

The same principle applies to all forms of bond or note issues. It controls also, in practically the same way, the issuance of preferred stock where the rate of dividends to be paid is fixed in the stock certificate. The amount that the investor is to receive annually is stated as definitely as in the bonds, except that it is not in the form of an absolute obligation and there is no legal default if the earnings are not sufficient to pay the amount. But if the earnings permit, the preferred stockholder receives a specified percentage on the par value of his stock. If, then, new funds are obtained by the corporation through the issuance of preferred stock, the terms again are fixed by contract, and the expected return is established at the time of the issuance; the facts appear directly in the accounts and are constantly available for rate making.

Let us assume that at a particular time the corporation needs a further $10,000,000 and it decides to issue 7% preferred stock. Let us assume that at the time of the issue the 7% nominal rate agreed with the market rate required by investors for this particular grade of security. With this assumption, the corporation would get $10,000,000 as an additional investment, and it would be obligated to pay 7% a year on the amount. This would constitute the annual cost to be borne by the consumers and included in the rates fixed for service. It would not change so long as the stock remained outstanding.

Suppose subsequently market conditions shift and the investors would require 8% instead of the 7% provided in the certificate. Then, exactly as in the case of bonds where the nominal rate is less than the market, an issue of stock at that time would be sold at a discount, with the result that the 7% paid annually on the par value would be equivalent to 8% upon the actual cash contributed to the corporation. Since, however, there is no date of maturity for the stock, there would be no amortization of the discount and the annual payment would be the net cost charged to consumers.

Conversely where the market rate of return is less than the 7% fixed in the certificates, the issue would sell at a premium, with the result that the 7% paid on the par value would be equivalent to the lower market rate on the amount actually paid to the corporation. The discount or the premium at the time of the issue would automatically equalize the nominal rate of dividends fixed in the certificate. The facts would be entered in the accounts and would be constantly available for rate making.

11. Common Stock Practice Needs Modification

There would be a problem, however, in the issuance of common stock on which generally there is no fixed rate of dividends. Under present practice the common stock is entitled to the residual earnings of the corporation after all fixed charges have been paid and after the declaration of preferred dividends. There is no legal limit upon the dividends on common stock so that any rate may be paid according to the earnings available for the purpose. The only general corporate restriction is that dividends must not be paid out of capital but out of earnings of the corporations, or out of surplus accumulated from profits of prior years.

For such automatic accounting control of investment and return as proposed, it would be desirable to transform all the capital stock of public utility and railroad corporations practically into preferred stock with specified dividend rates. If this were done, the rate of return would be determined by the market, just as with preferred stock or bonds. There would be a predetermined annual dividend return on each share of stock, and its value at any point would depend upon the market rate of return.

To fit future common stock issues most conveniently to the proposed plan of automatic control of return, would require, first, that the practice of issuing common stock with no specified dividend rate be changed by legislative action as applied to utilities. In the second place, there would have to be legislative permission also to issue capital stock at a discount. Under the present law there is no hindrance to issue stock at a premium above par value where such greater amount is determined by market conditions, but there is no corresponding sanction to issue stock below par if the market does not uphold the par value. But with such definite regulation as here suggested, the inherited practice of common stock unlimited as to dividend rate but with the prevention of issue below par, has outworn its usefulness and should be adjusted to the conditions of the regulated enterprises. If the return in any event is to be limited by regulation, why not place the limitation in an exact form directly in the stock itself; and if the basis of the return is to be actual investment, then why not recognize this also in the direct issue, permitting it at a discount as well as premium according to the particular market conditions? If these changes in the law fit better the conditions of public utility investment, why should they not be made? The form of the stock should be conveniently adjusted to the facts and requirements of regulation. The rights and limitations ought to stand directly in the stock certificates, and should not be indirectly established by external conditions.

Even in ordinary corporation finance, where the rate of dividends on common stock is not limited, its market value is nevertheless based upon an assumed earning power which is indicated by the history and the prospects of the corporation. For example, even if the stock does not have directly the term of 8% dividends, nevertheless if this has come to be its established earning power and is likely to be continued for the future, it is the basis upon which its market value is determined. If, then, with an established earning power of 8% dividends, the market rate of return upon the particular security is higher than 8%, the stock sells at a discount, and if lower it sells at a premium. While the stock cannot be issued directly at a discount, after its issue it is sold below or above par according to its expected earning power and the market rate of return.

These are the controlling facts which fix market values of common stock without a nominal dividend rate. If, then, the market value is based upon a presupposed dividend rate, why not recognize that fact outright in the case of utilities, and place on the stock a limited rate to which the investors are entitled after they have contributed the funds to the corporation? If such limit is fixed, and the dividend is included in the cost of service, just as interest on bonds and dividends on preferred stock, there would be an automatic adjustment to changing market conditions and with every new issue the actual cost would be determined and subject to continuous accounting control.

But the rigid control of return for future investment does not depend upon the modifications in the form of common stock. While the changes suggested would facilitate the accounting, the return on future common stock investment could be determined definitely even without such adjustments. All that would be necessary is the pronouncement that future investments made through common stock issues would be entitled to a specified rate upon the par value. In this way a nominal rate would be established indirectly by commission action instead of directly in the stock certificates.

Let us assume that the commission has definitely pronounced that an 8% nominal rate will be allowed, and no more, upon all future common stock issues. If complete adjustment has been made as to issues prior to the initial valuation, then the investors would know definitely that they are to receive a return of 8% on the par value and would pay for the stock accordingly. Although the certificates would not carry a nominal rate, they would have a limited dividend imposed by order of the commission. The facts would be clear, although they would not be shown in the form of the securities.

12. Common Stock Negligible Factor

In any case, however, future capital would be raised preponderantly through bonds with fixed interest rates or preferred stock with limited dividends. Comparatively little, if any, actual investment would be made, through common stock, whatever the form of the limitation upon the return.

Our idea of common stock harks back to unregulated and speculative business, and does not square with the underlying notions of regulation, however vaguely defined and unsatisfactorily carried out. Common stock is viewed generally as a risk bearer, protecting bond holders and preferred stockholders from the fluctuations and hazards of the business. But this conception does not correspond with the facts which do or should control in the regulated enterprises. The risk element or the speculative factor has been largely eliminated, and all security owners are in reality treated as public creditors. All are entitled to a fair return and, within the limits of what the traffic will bear, are practically guaranteed the return.

The return is bound to be considered as a public obligation to investors, and not as a risk or speculative reward determined largely by exterior competitive forces. The amount of the return is included in the total cost of service to be paid by the consumers. These principles are recognized even under the present vague and undefined procedure, and would be carried out to the letter under the proposed plan. Consequently, since the conditions pertaining to utility common stocks are entirely different from those of competitive industries, the form and legal provisions should correspond to the particular status.

It is due in large measure to the peculiar conditions brought about by active regulation that very little capital has been raised in recent years by utility companies through common stock. The bulk of new investments has come through bonds, a much smaller amount through preferred stock, and probably a still smaller portion through common stock. This has been due to the newly established limitation in the return, and particularly to the fact that in a large proportion of cases common stock had no marketable equity. Even if in any case stock had been considered as a means of raising new capital, its rights would have been merged with those of the previously existing stock which had little or inadequate support to permit the sale of the proposed issue at par. As previously indicated, only about 25% of the new securities in recent years have been stock, common and preferred, and a large proportion of this small percentage represented control or duplications in the acquisitions of other stock without any new investment.

The proportion of new financing in utilities through common stock is certain to decline still further in the future, and perhaps disappear altogether if the proposed fixing of the return is adopted. After the appraisals are made of existing properties and the accounts rewritten in accordance with the proposed plan, one of two methods may be adopted, as explained in Chapter IX. Either the common stock outstanding would be reissued in each case to conform to its ascertained equity in the properties, or its par value would remain the same as before and the adjustment definitely stated in the balance sheet. In the latter case, an additional issue of common stock in most cases would be an impossibility unless the restriction of issue below par were removed; for the new shares would represent investment at least equal to par, while the earlier shares may have an equity less than par. Of course, the rights of the earlier issue could be distinguished from the subsequent, but then one or the other would really constitute preferred stock. In fact, however, common stock issued for actual investment has not been very important in recent years. It has represented mostly control by holding companies, not new investment.

But whatever method is adopted, the issue of common stock with a fixed rate of dividend would serve no purpose. Under the proposed plan the major function of common stock, the bearing of risk, would be virtually eliminated. The capital stock already existing would continue in financial control of the properties but there would be no special advantage or function in such control. All additional capital may as well be raised through bonds or preferred stock. If, however, some common stock were issued, its return would be determined and kept under accounting control just as the return upon any other form of security.[1]

13. Conclusion

"Fair return" can thus be defined and controlled just as readily as "fair value." The rate base and the rate of return should alike rest upon cost. After the appraisal of existing properties, a fixed rate of return should be established. Both factors should remain permanent as the basis of return on existing properties. Future capital additions, from whatever source, would be shown by the accounts, both as to amount invested and the return paid to the investors.

The point to bear in mind is that if we wish effective regulation over public utilities, all speculative factors must be removed. Investments in utilities must be put on the solid basis of fact. The difference in classes of securities of a utility should consist only as to priority of lien. The common stock would thus merely be the last junior lien upon the property but its yield would be determined by the same factors as the return upon the prior lien securities. After the rate base and the rate of return have both been determined for existing investments on a reasonable basis, future operation could be carried on under strict cost control. The investors would know what their return is to be, while the public would know its exact obligations.

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[1] The issue of stock of non-par value has come into considerable use during recent years. Whatever advantages it may have for non-regulated industrial corporations, it is not well suited to the purpose of exact public utility regulation. Par value securities lend themselves more readily to convenient determination of investment and return. If, however, non-par value stock is used for utilities, the return should be made a fixed amount per share. If this is done, the return becomes an exact factor even if not most conveniently shown in the accounts.

CHAPTER XI

RATE SCHEDULES

1. Total cost and individual rates. 2. Flat rate popular. 3. Direct and indirect costs. 4. "What the traffic will bear." 5. Railroad freight classification. 6. Other rates may need classification. 7. Peak load and average demand. 8. Maximum utilization desirable. 9. No discrimination involved. 10. Commercial users should bear heavier burden. 11. Zone system on street railways. 12. Flexible rates. 13. Rates fixed by franchise or contract. 14. Revision of franchise and contract rates. 15. Conclusion.

1. Total Cost and Individual Rates

In our discussion of rates in the preceding chapters, we were concerned with the charges for the product or service in the aggregate. We endeavored to show that the only workable basis of rate making is the cost to the utility. The total yield from rates should be sufficient to pay for the total cost of the service. Rate making, however, does not end with the determination of the rights of the investors, duties of the consumers, and with the accounting control of these rights and duties. It is necessary, in addition, to fix rate schedules, grouping the consumers into suitable classes and establishing a specific rate for each class.

The making of rate schedules involves in part detailed and complicated cost analyses and in part consideration of public policy as to what is desirable on broad social grounds. Up to the present, the commissions have contributed comparatively little, and have hardly ever taken the initiative, in working out scientific rate schedules. Too much of their time and effort have been consumed in endless wrangling over valuations and returns. Whatever progress has been made in rate diversification, is due mostly to the efforts of the utilities themselves. But, under the uncertainties of rate making, the motive has been the same as that of private monopoly. The companies have sought such diversified rates as would produce the largest returns without immediate regard to relative costs or desirable public policy.

If, however, the total cost to be borne by the public is exactly determined, as we propose, the commissions would be free to engage in the more constructive aspects of regulation, among which the establishment of rate schedules would be of prime importance. Proper rate diversification can be worked out only through painstaking research and experimentation, and should not be circumscribed by legislation. The commissions with their staff of experts should be unhampered to carry on the work. But they should begin with clearing the ground of the existing confusion as to the total costs.

2. Flat Rate Popular

It is not our purpose to consider the routine of preparing rate schedules in general, or to show how schedules are to be constructed for particular utilities. We shall discuss only very general principles which should control. But their application must be governed by the specific requirement of each case, as revealed by careful research and experimentation.

At the outset it is well to acknowledge the fact that diversified rates for different groups of consumers tend to arouse public criticism. The common view is that there should be a uniform rate for the services or products of any utility; a flat rate of fare on street railways, a single rate per thousand cubic feet of gas, or per kilowatt hour of electricity, etc., for all classes of consumers.

This demand for uniformity in rates is widespread, and has to be taken into account. Under such policy, rates would be determined by the total cost and the total amount of the service. Thus, the total cost of street railway transportation in a city would be divided by the total number of passengers carried to establish a single rate of fare. Likewise, the total cost of electricity or of gas production and distribution would be divided by the number of kilowatt hours or cubic feet sold to determine the rate per unit.

Such a procedure has the advantage of simplicity and does carry with it a rough idea of justice in that all consumers seem to be treated alike. We believe, however, that it does not meet the operating and financial conditions in most of the utilities. Its simplicity and apparent justice, however, are important elements and should control, unless a departure from a uniform rate is clearly justified either because of variation in cost or for other adequate reasons.

3. Direct and Indirect Costs

The starting point in rate making is the total cost of providing the total service. After this has been established, the problem is whether there are material differences in cost between different parts of the service rendered. For example, in railroad traffic there is first the distinction between passenger and freight service; the cost of the one should not be borne by the other. Likewise in the hauling of freight itself certain classes of commodities require more expensive handling than others; consequently, their rates should be adequate to cover the higher cost. Similarly, in most of the local utilities there are directly variable costs which should receive independent consideration. The direct cost of one service should not be borne by another.

In the classification of the different kinds of service, the first step is to determine the separable or so-called direct costs incurred in the production of such service. They consist of items definitely chargeable to a specific class of service, while the indirect are costs incurred in the total service which cannot be definitely assigned to any particular class. The first can be charged directly in the rates levied upon the various groups, while the second have to be allocated or apportioned among the groups upon some reasonable basis.

The direct charges can usually be fairly well determined, although even these often require rough approximations. They mostly consist of the cost of labor and materials, or the provision of particular facilities, which impose a specific burden upon the service in question. These direct charges are sometimes called variable expenses, because they vary more or less directly with the amount of the particular service rendered. The indirect costs are often referred to as non-variable, because they are incurred through the very fact of operation, and do not increase or decrease with the amount of any particular service.[1]

The most difficult problem in the preparation of a rate schedule is the allocation or apportionment of the indirect or non-variable charges, which, as a whole, must be borne by the consumers, but which do not bear an exact quantitative relation to the different groups. There has to be some basis of apportionment which is reasonable and in accord with the underlying facts of the business. Frequently the allocation is made upon a more or less arbitrary basis. For example, the total indirect expense of a utility may be distributed among the different groups of service on the basis of direct expenses, or according to the relative units of service provided for each group, or upon some similarly mechanical basis.

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[1] No attempt is made at extreme precision in the use of terms. For our purpose, direct expense, variable costs, out-of-pocket costs, or additional costs, are used interchangeably to express the conception of costs incurred specifically for particular service, as compared with those imposed upon the business as a whole without immediate connection with any one class of service. The latter will be referred to as indirect expense, non-variable, general, overhead or joint costs. The terms as used will include not only operating expenses as strictly defined, but also taxes and return on investment.

Such methods of allocation are mostly of a statistical character, and usually furnish fairly satisfactory results. But they are likely to be misleading if not analyzed critically, for they may defeat the very purpose of desirable rate diversification. A commission should not commit itself to any particular method of cost allocation, but should have regard for the purposes involved, and should then apply in each case such methods as will best serve the desired end.

4. "What the Traffic Will Bear"

The chief object of any rate classification should be to make available the maximum amount of service at the lowest possible charge to each group. Having this purpose in mind, we believe that the best basis for the apportionment of the indirect costs, is the relative ability of each group to contribute. The separation into different classes of consumers is usually in itself a tacit recognition of their relative ability to bear higher or lower charges. The very fact that one group can contribute but little, while another can contribute substantially to the joint costs, sets one apart from the other. Relative ability to absorb the non-variable charges should therefore be the primary or chief basis of rate classification.

To a large extent this basis corresponds to the principle of "what the traffic will bear." This phrase conveys broadly the idea that every class of service pays such rates above the direct cost as will bring the largest return to the business. After the out-of-pocket costs are covered, then every addition to the price or charge is net gain, and the limit is set by the decreasing volume of sales with the increasing price to consumers. "What the traffic will bear" is the price which taken with volume of sales produces the maximum return above direct expenses.

There is, however, this difference between the more general connotation of "what the traffic will bear" and its proper application to public utility rates. In its general significance, a corporation would charge any class of consumers a rate or price which would bring the greatest profits. This would be the case with a business whose product or service is not subject to price control. In the case of utilities, however, the total charges to the public are limited by the total cost of service. Consequently, the general idea of "what the traffic will bear" would be applied to the allocation of the joint costs only to the extent of defraying these items, and not beyond. "What the traffic will bear" can be applied only to the relative ability of the different classes of consumers to share in the total joint costs chargeable to the public. It does not connote any profit element beyond the total costs of the utility.

5. Railroad Freight Classification

The idea of distributing the joint costs according to relative ability has been applied most extensively to the determination of railroad freight rates. In the determination of a rate schedule for freight, there is first of all the so-called "classification." The bulk of the different kinds of commodities carried by a railroad are grouped into half a dozen or more classes. Each class contains a number of different kinds of commodities, which are subject to the same rate per unit, per hundred pounds, or ton, or other physical measurement employed. At one end is the class that carries the highest rates, consisting generally of valuable articles, mostly of finished manufactured goods, which are able to bear the highest rate without affecting materially the quantity offered for transportation. At the other end is the lowest grade of more bulky and cheaper goods, usually raw materials, which must have low rates if they are to be transported at all. In between are the different groups more or less in the order of their relative ability to carry charges for their transportation.

In the practical determination of a railway freight classification, a large number of factors are considered. Some of these involve more or less directly the question of direct cost. This appears in the bulk, weight, fragility, risk, etc. Other things being equal, an article which involves heavy direct expense will go to the higher classification and pay a higher rate, while one that causes little additional expense will go to a lower classification. Nevertheless, a largely controlling, often unconsciously applied, factor, is the relative ability of the different commodities to stand the higher or lower rates above the direct costs. The purpose of the railroad is to establish such schedules as will produce the maximum traffic with the greatest return from each class. The underlying idea is to make each class of freight convey its own out-of-pocket costs and to contribute as much as possible to the total joint costs and to the profits of the business. The highest classification includes principally goods which contribute most heavily to the joint expenses and profits, while the lowest group conveys the least.

From the company's standpoint, the purpose has been to obtain from each class the maximum return above the direct costs, without regard to the total costs of operation. From the standpoint of regulation, however, the purpose should be to make each class share according to its relative ability in the total joint costs without any increment beyond the fixed return on the total investment.

6. Other Rates May Need Classification

The same idea of apportioning the indirect costs to the different classes of consumers according to relative ability, should control in most of the utilities. It has come to be rather definitely recognized, however, only in the case of railroad freight rates. In other utilities it has doubtless figured at times in rate determination, but has seldom been employed deliberately as a basis of classification.

In the simpler utilities, the idea is perhaps not particularly important, and its practical application is limited. For example, in the production and distribution of gas, the process of manufacture is practically continuous throughout the day, and the product can be readily stored; consequently, the bulk of the costs can be viewed as direct, and there is no important issue involved in the distribution of indirect costs. For the most part, it has been deemed the simplest and the most workable policy to charge a uniform gas rate for all classes of consumers.

But even with gas, there are substantial joint costs in which the question of relative ability to pay may be worth considering. There might be a wider utilization of gas for various commercial purposes if lower rates were established for them than for ordinary domestic uses. It is difficult to determine to what extent such diversification is desirable, but the commission should be free to make investigations and experimentation along this line.

Even in such a comparatively simple utility as gas a searching investigation may prove that a considerable group of consumers require special outlays for additional capital, together with relatively large operating costs in spite of the fact that they consume relatively small amounts of gas. Such groups usually should pay a rate at least sufficient to cover the expenses incurred in their behalf. It is probably true that under a uniform gas rate many consumers have not borne their proper share of even the direct costs. It may be good public policy under certain conditions not to require a given group to pay the full cost of the service, but in such a case we should frankly recognize the fact, and not cover it up by fixing a single rate, on the tacit assumption that there is no other course to pursue.

7. Peak Load and Average Demand

For the more complicated utilities, a wide variation in charges between different classes of consumers is practically inevitable. Its basis is bound to be largely the relative ability of the various groups in the community to pay an amount above the direct cost of the particular service.

An excellent illustration is found in the production and distribution of electricity. A company furnishes electricity to light and power consumers. But for each of these general groups, there is such wide variation in direct cost of service, the quantity of current consumed, the time of use, the availability of substitute service, that proper classification for a scientific rate schedule becomes an unavoidable but an exceedingly complex problem.

The best approach to a study of the complicated conditions in making a desirable rate schedule, is through consideration of the variation in demand for service during the different hours of the day or different parts of the year. A company must be prepared to furnish service at the maximum point of demand, and must provide facilities accordingly, together with a reasonable margin for safety. It must have enough generating capacity to provide the so-called peak load, when maximum consumption takes place, without regard to the much lower demand at other times of the day or at different seasons of the year. It is this maximum demand, or peak load, which determines the amount of power plant and equipment, and other facilities, that must be provided. In other words, the amount of the investment is fixed by the peak load. Consequently, in the determination of an electric schedule, consideration must be given to the relative contribution of the different rate groups to the demand at the peak load; or, more accurately stated, such relative share in the maximum demand is an important element in the electric rate classification.

For illustration, let us assume some consumers demand service only during the maximum period of consumption, and do not take service during the rest of the day. Clearly, they together compel the corporation to furnish corresponding additional generating capacity exclusively for their use for only a short period of time. Consequently, the entire return on this additional investment is a direct charge to the group, and the out-of-pocket cost of service is great in proportion to the number of kilowatt hours consumed by the group. The rates, therefore, must cover as direct cost, not only the labor and materials at the peak, but also the interest upon the special investment; and they must be high accordingly, if part of the direct cost is not to be borne by other groups in the community.

Other consumers may take service wholly off the peak period, at a time of general minimum demand or least consumption. In their case, the direct assignable costs are low. For them there is no separable plant investment. All the existing generating facilities would have to be provided even if they were not served. Moreover, the direct labor and materials cost would be relatively low, because even during the lowest point of demand the fires must be continued, so that the provision of the required electricity involves but slight additional cost for labor, coal and other materials. Consequently, for this group the strictly assignable expense is very small, and the question is, what proportion should it contribute to the joint expenses of the business?

It is particularly with the service during the off-peak period that there must be careful regard for the principle of relative ability, or what the traffic will bear. It is during this period that the demand for electricity can be greatly developed by establishing rates which will attract new business, but will require little outlay to supply the additional service.

After the amount of investment has been determined by the peak requirements, there should be such differentiation in rates as to bring about the maximum utilization of the plant and equipment during off-peak periods, and to make each group of consumers contribute according to relative ability to the joint costs of operation. A particular group may be able to contribute very little; but, if it pays its direct costs and shares even slightly in the joint charges, it assists in the fuller utilization of the properties. Another group is able to pay a larger share; and all the groups together pay the total costs. As in the railway freight classification, there must be regard to the relative ability of the different groups of consumers to contribute to the joint costs.

8. Maximum Utilization Desirable

In actual electric rate making, the principle of rate differentiation on the basis of relative ability of the different groups to contribute to the joint costs, has been used very little as a deliberate policy. Efforts have been made, however, to fix electric rates according to cost, especially with careful analysis of direct costs. But the distribution of joint costs has been made mostly by mechanical or statistical methods of allocation, with little consideration to the grouping of consumers according to what the traffic would bear. The latter principle, while difficult to apply, is the proper basis of allocation; it encourages the fullest utilization of the equipment, reduces the burden of indirect costs to all consumers, and is thus of the greatest benefit to the community as a whole.

The effect of rate differentiation upon utilization of plant and equipment is reflected by the so-called load factor. This is the ratio of the average use of plant capacity to the maximum requirement. Thus, suppose one company has a maximum demand of 100,000 kilowatts, the highest point during a day, while the average demand for the day is 25,000 kilowatts. Another has the same maximum of 100,000 kilowatts, but an average demand of 80,000 kilowatts. In the first case there is an average daily utilization of only 25% of the plant maximum, which is a low load factor. In the second, there is the same maximum demand but an average of 80%, which is a high load factor.

The load factor represents the degree of utilization of electric facilities and is used as an index of efficiency in operation. The electric companies have done a great deal themselves to raise the load factor. The commissions have concerned themselves principally with rates for the ordinary domestic and the small commercial consumers, who have presented the bulk of the complaints against high rates and who have been the chief beneficiaries from the efforts at rate regulation. For the larger commercial consumers, however, the utilities have been practically free to fix the rates as they wished, subject only to the general requirement of filing the schedules with the commissions and avoiding discrimination. Within a comparatively wide latitude to experiment with rates, many companies have gained extensive experience in grouping commercial consumers along the lines here suggested—for the most complete utilization of plant and equipment, making each class contribute to the joint costs of operation according to ability.

By adopting this policy, more or less deliberately, many companies have had striking success in leveling up their load factor with direct benefit not only to themselves, but to the large number of small light and commercial power consumers. Along this line there is great opportunity for the companies and the commissions to make further advances. This cannot be satisfactorily accomplished through use of statistical formulas, but can be brought about only by intelligent research and experimentation.

Although the use of the load factor as an operating index is probably best suited to the electric utilities, the idea behind it need not be confined to them alone.

The aim of all utilities should be the most profitable maximum utilization of the facilities within the limits of rate control. This aim can best be reached in most instances through proper rate diversification.

9. No Discrimination Involved

There may be popular criticism against such rate differentiation on the ground that it is discriminatory against small consumers. But a clear understanding of what is involved will meet the objection.

The point must be kept clear that for each group of consumers the purpose would be to obtain a contribution to the joint costs in proportion to their ability. While at times mistakes would probably be made in the classification, the object, nevertheless, would be to separate the groups according to their relative ability to contribute to the joint costs in addition to the direct expenses incurred for each group.

With this idea clearly in mind, there would manifestly be no ground for objection on the part of the small lighting consumers. First of all, we must realize that usually the lighting consumers cause the peak or maximum demand. Consquently, if they are the only consumers, they must pay all the costs of operation, including both direct charges and joint expenses. But if the company is able to obtain commercial users for the period when the plant and equipment would not be otherwise utilized, there is an advantage for the domestic consumers in that the off-peak users contribute a substantial amount to the fixed charges. This means they will pay lower rates because of the rate differentiation and the maximum utilization of the plant than if the same rate per kilowatt hour was prescribed for all classes of consumers. There is no attempt at discrimination, but only such variation in rates as will benefit all users and obtain the widest possible distribution of the joint costs.

10. Commercial Users Should Bear Heavier Burden

A practical course in establishing such rate differentiation would be to determine carefully the direct costs of the various commercial users and then to place on each class a portion of joint costs on the basis of relative ability. This would fix the rates for commercial users strictly according to "what the traffic will bear," and in most cases would probably obtain from them the maximum of the joint costs.

Then in fixing the rates for domestic consumers, we would place on them only the direct costs of operation and the remaining joint costs which could not be absorbed by the commercial load. In the case of a large utility with a high load factor, such a policy would place the bulk, if not all of the joint costs, upon the commercial users, and would leave only a small burden, if any, for domestic lighting. In many instances the commercial users might be able to bear even more than the actual joint costs incurred. In other words, if they paid rates without limits upon "what the traffic will bear," they would pay not only their own direct expenses, but would bear all of the joint costs of the business as well as some direct expenses of the lighting consumers.

The commissions in developing systematic rate differentiation would indeed face the question whether, in following the idea of distributing joint costs according to relative ability, it would not be desirable to charge commercial consumers what the traffic will bear, and then place upon the lighting consumers only the remainder of the costs. If this course were pursued, in many cases the ordinary lighting rates would be substantially lower than the direct costs of furnishing the service. This, of course, would be a matter of large public policy, to be determined according to broad social considerations. There are important public advantages in wide and general use of electricity. There are few forces in modern life that tend to raise the standard of living as much as electric current in the home. It might, therefore, be good policy to let the commercial users absorb as large a share of the costs of the business as possible, and place upon the domestic consumers only the balance of the costs with the purpose of fixing the rates at a minimum point.

In the more complicated utilities, like railroads, telephone and telegraph, and electricity, where a large proportion of the service is of an industrial or commercial character, there is no great social reason why charges should not be based on "what the traffic will bear." If commercial rates were below this point it would probably result in somewhat greater profits to the producers rather than in lower prices for the ultimate consumer. These prices are usually determined by general market conditions and affected very slightly by the particular utility rates.

We believe that for the most part commercial rates might well be based throughout upon "what the traffic will bear," but that any excess earnings above the fixed return to the investors should be safeguarded for the benefit of the public. As already suggested, in some cases the excess might be used to reduce rates for domestic users, where the service enhances personal well being. But where this does not seem feasible, it may be used also as a source of funds for the extension and improvement of service, or it may become a part of the public revenues.

The possibility of using public service corporations as a source of public revenue by taking the excess above the stipulated returns, deserves serious consideration in the determination of future rate schedules. It promises large revenues, with little public burden and small expense of collection. In any event, this is a matter of policy, subject to determination by the public authorities, but it would be rendered entirely feasible if the total return payable to the investors is once definitely fixed, so that their rights would not be affected by the particular policy.

11. Zone System on Street Railways

The principle of rate differentiation discussed in the preceding sections has chief application in charges for electricity and railway freight. It has bearing, however, on all public utilities and should be kept in mind by the commissions in establishing any rate schedule.

The street railways, for example, are subject to peak demands in exactly the same way as are the electric properties. A company must provide plant and equipment to take care of the maximum demand during the morning and evening rush hours. Consequently, a large proportion of the property is utilized only for a comparatively short period of the day and remains idle during other hours. Leveling up the load would reduce the burden of overheads, and fixing rates for that purpose would be desirable if feasible.

There is, however, great difficulty in applying the principle of rate differentiation to street railway rates. So far, the practice of a single flat rate for all riders has been generally in vogue. But during recent years there has been a great deal of discussion and considerable experimentation with departures from the single fare. As yet, however, there has not been sufficient experience to justify the establishment of any rate schedule that departs appreciably from the uniform single fare.

There has been considerable interest in the so-called zone system, where the rate varies according to the distance traveled. The city or district is divided into zones or areas of approximately equal distances. A flat rate is fixed for each zone, with an additional lower fare as a passenger is carried through each successive area. For the first zone the rate may be three cents, and for each additional zone two cents.

No general conclusion can yet be drawn as to the desirability of the zone system, but it furnished valuable experience. There are two points, however, which must be considered in applying the zone system and judging its results. First, the direct cost of street railway service is difficult to determine, and second, the distance factor may be easily exaggerated. If a company must provide plant and equipment for the peak load, and must furnish a schedule of service based upon the more general convenience of the public, the bulk of its costs is practically fixed and only a small proportion is of a direct character.

If this idea is kept clearly in mind, we see that a long distance passenger, even though he pays the same flat rate as the short distance rider, will nevertheless be profitable so long as he pays something above the direct cost of his transportation. The question is not merely of relative distance. The assignment of cost on the basis of distance may result in burdening, rather than assisting, the properties financially. We must consider the effect of the distance traffic upon the utilization of the plant. The long distance traffic is profitable if it contributes its own direct charges and pays something toward the joint costs. A scientific rate schedule would seek to make the long distance riders pay according to their ability to the joint costs. But it would obviate fixing the charges so high as to discourage or cut off the long distance traffic. This has been the difficulty in many of the experiments with the zone system. The increase in charges with each successive zone piles up the rate so rapidly for any considerable distance as to make riding prohibitive. In so far as the increase in such successive rates represents actual direct cost of transportation, the discouragement to long distance riding is not a loss. But the question is whether the increases in most cases have not been so great as to limit the use of the facilities without any advantage to the short distance traffic.

The street railways must have a large traffic to bear the total burden of joint costs. If their rate schedules are constructed on an arbitrary statistical basis, they are likely to drive away traffic and to leave the entire burden of joint costs upon a smaller group of riders. The point should be clear that, as the volume of traffic increases with the leveling up of the load, the burden of the indirect costs becomes relatively smaller for all classes of riders. While, therefore, the experience with the zone system has been fruitful, the results should be studied from the standpoint of its effect upon the volume of traffic, and the ultimate cost of service upon all classes of riders.

12. Flexible Rates

Apart from the desirability of rate differentiation based upon experimentation and scientific inquiry, our conception is that rates in general should be based upon actual cost as shown by the accounts. The costs, let us repeat, would include the prices of materials and labor consumed in current operation, together with depreciation, taxes, and return on investment. The cost of materials and labor would fluctuate with market prices from year to year, while depreciation and return, would be fixed by costs as property installations and investments take place and would extend over the life of the property and to the maturity of the securities.[2]

In computing the cost of service we thus have constantly varying elements, and factors fixed for a comparatively long time. In most cases, however, the first constitute the greater percentage and sometimes reach 80% or more of the total costs. The total, therefore, is subject to constant variation.

If we consider the fluctuating costs in connection with the changing price level, we realize that in general rates charged to consumers must be sufficiently flexible to meet the shifting conditions. Our idea, therefore, is that all the cost elements, both the immediately fluctuating and the relatively permanent, should be under strict accounting control, but that the rates should be readily adjustable upwards or downwards according to the facts established beyond dispute. The return required would be shown by the accounts as definitely as the cost of labor and material, and the rates would be fixed high enough to cover the total costs of operation.

While under our plan rates would be thoroughly adjustable according to changing costs, an important consideration would nevertheless be to make as few rate changes as possible. Provisions should be made for a special reserve sufficient to take up moderate fluctuations without requiring frequent rate adjustments. During a period of declining costs, the reserve would be built up to a point where rate reductions would seem clearly desirable, and during rising costs would be drawn upon until rate increases would seem to be warranted. The actual cost of the service, however, would not be affected by such an arrangement, which may be called "reserve for equalization of return." The effect upon the rate payers would be negligible; the rates for a time might be slightly higher than actual costs or slightly lower, but never far out of line with the facts shown by the accounts. The investors would always get their stipulated return. The scheme would retain reasonable stability in rates, avoiding the confusion of frequent changes, yet fixing rates upon scientific bases and preserving the exact rights of the investors.

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[2] Taxes, of course, would be fixed by the governmental bodies and have no direct connection with operation. However, they vary according to such governmental action and are not fixed for a period longer than a year.

13. RATES FIXED BY FRANCHISE OR CONTRACT

A condition that demands special treatment is found where rates have been definitely fixed by franchise or by contract prescribing various fixed financial rights and obligations.

To a large extent throughout the country, the franchises granted to street railway companies provide for maximum fares, usually five cents, fixed as a condition upon which the companies were given the right to construct and operate the properties, and intended to control for the life of the franchises, whether in perpetuity or a limited number of years. To a much less extent similar restrictions are found also in the franchises of other utilities. The form or source of the limitation has varied; sometimes the condition was fixed by direct legislative action; sometimes through local franchise granted by municipalities in permitting the companies to use the streets and public properties; and at times the limitation is founded upon direct constitutional rights of the cities.

These rate restrictions were incorporated in the franchises mostly before modern commission regulation came into existence, and furnished at the time the means for public protection. For long years after they were fixed there was a downward course of prices, attended also by improvements and growing economies of operation so that the rates were sufficiently profitable to the companies and no question as to their justice to the investors was raised. In the case of street railways the original fare, five cents, mostly remained throughout the long decline in prices and advances in economies. In comparatively few instances was there a reduction through public effort or otherwise below five cents. The increasing profits went to the benefit of the companies and, unfortunately, were used in many instances for financial maneuvers and exploitation.

With these conditions we arrived at a period of rising prices, where the surplus profits were gradually absorbed by growing costs of operation. The swing upward, as stated earlier, started in 1897 and continued more or less steadily to 1914, before the war, when prices were about 50% above the previous low point. With the war, however, costs advanced with leaps and bounds, and mounted higher even after the war, receding only in 1920 and have since remained about 60% above the prewar level.

These facts are recalled casually for consideration with the fixed franchise rates. Naturally, with mounting charges for labor and materials after 1914 the companies soon found themselves in financial difficulties and proceeded to apply to the authorities for higher rates. Naturally, also, they found no enthusiastic response to their petitions, with the result of complicated legal struggles, deterioration of service, loss of credit, and many receiverships.

The problem has indeed been difficult, and it would serve no purpose to attempt an allocation of fault between companies and the public. As yet, almost a decade after conditions became acute, the legal situation is still befogged, to what extent franchise rates may be legally increased by anybody except the contracting authorities. In some states the restrictions have been practically obliterated, and the right of a company to a ''fair return'' recognized, notwithstanding franchise limitations. The situation, however, is so various that we shall not attempt even a general survey.

The question we raise is what, in general, about the wisdom of fixing long term rates through franchises or municipal contracts? As we see the question, in terms of shifting price level and greatly varying costs, the policy of fixed long term rates payable to a company is a mistake. It does not furnish proper protection to the public either as to rates or service. For the companies it either induces extravagance or works financial disintegration. Best protection comes from systematic direct regulation, where rates are elastic and are fixed according to changing conditions and definitely ascertained facts.

As to inflexible rates, experience amply shows that during a period of falling prices the companies are extravagant as they obtain increasing returns without effort or justification on their part, and that financial manipulation and exploitation inevitably follow. On the part of the public, there is dissatisfaction and an almost fruitless effort for reduction in rates. During rising prices, the companies soon come upon financial difficulties, and even if the rates are not increased the public pays a large part of the higher cost through poor service and financial instability. The public has gained little from such protection.

14. Revision of Franchise and Contract Rates

For the future, without attempting to oversimplify the many complicated situations, the fact seems clear that far the better course is to give up rigid franchise rates and substitute flexible rates determined by a scientific machinery. This does not mean a recommendation that all existing franchise restrictions should be simply obliterated, but that new agreements should be negotiated based upon modern understanding of conditions. The franchises throughout ought to be modernized, and if the rate restrictions are removed either by legislation or agreement certainly all other antiquated rights and privileges granted to the companies ought to be brought to present day standards of policy.

Extreme cases, like the rapid transit contracts between the City of New York and the companies, involve special conditions which cannot possibly be brought within the scope of this work. We do believe that the long term five-cent fare as to the rapid transit contracts in New York City was a mistake; but likewise that other very important terms were unjustified. The city obtained the five cent fare, and the companies secured large preferential returns in a partnership undertaking. We do not see how with the growing financial pressure under the five cent fare, especially with inter company financial complications, the municipal authorities could justifiably have agreed to an increase in fare without a thorough revision of the contracts in other respects. Here, as in other special cases, the situation must work itself out within the scope of its own circumstances.

But, if any city were embarking now upon a partnership enterprise in transit or other utility with private companies, we should certainly advise against a fixed fare or rate; or at least we should urge that the return to the investors should be definite without depending upon a fixed rate. We realize, of course, that as a matter of municipal policy, a particular rate like the five cent fare may be deeply imbedded in municipal history and may have to be continued as a matter of general policy. Such cases, however, would fit completely within the scope of our plan. The cost of service as we have defined it, cannot possibly be avoided by any kind of arrangement for rates. But there is no reason why some of the costs might not be borne by the municipality through taxes instead of entirely by the particular consumers. This is especially true of transportation, where the costly plant stands as a general municipal improvement and benefits not only the riders but all forms of business and property. In such cases, particularly where the necessary capital investment is very large as for rapid transit in New York City, there is good reason for placing at least some of the costs upon the city as a whole. At the present time, with high construction costs for new subways, it might be best for New York to hold to the five cent fare and pay any deficiency in the interest charges out of taxes.

Whether any part of the total costs are to be borne out of taxes, is purely a matter of municipal policy. For a great city, it would not matter much whether the costs are paid out of taxes or revenues collected from the riders. But to assist the municipality to carry out any program desired, there should be clear record of costs, and the right of the investors should be definitely provided for, so that their interests would not clash with or be affected by any public program.

Even as to the existing rapid transit contracts in New York City we hazard the opinion that both the companies and the city would be well served if they revised the contracts within the lines that we have been discussing, giving the companies practically a guaranteed return on their net investment, but leaving the city free to deal with the question of fares as it may deem desirable. The investors would have then systematically safeguarded what they are equitably entitled to, and the city would be free to work out its own policies without financial conflict with the companies. Like considerations would probably apply also throughout the country to most of the special utility complications which have become acute in their consequences during the past ten years.

15. Conclusion

The principles and methods of establishing scientific rate schedules, if discussed adequately, would have to be taken up in detail for each utility. This is beyond the scope of our inquiry. It has been our purpose to point out the necessity of determining the total return to the utility, and to make it possible for the commissions to give due consideration to the important problem of rate classification, which has received practically no attention because of the time consumed in struggling with the confusion of valuation and return.

Proper rate classification will receive adequate treatment only when the questions of valuation and return have been settled. First of all, a machinery must be provided to determine definitely, beyond dispute, the total costs of a utility, so that there could be no financial objection upon the part of the company to any rate schedules that might be proposed by the commissions. The latter, then, should be free to construct any schedule in harmony with sound public policy. They should seek to fix such schedules of rates as will serve most satisfactorily all classes of consumers with extensive freedom for experimentation and special consideration of the facts.

The only general principle that can be laid down for rate classification is that each class of consumers should pay the direct costs of service, unless the general public interest would be served best by frankly abandoning this rule in a particular case, and that the joint costs should be allocated according to relative ability. This is an important and difficult problem, which should not be complicated with the additional confusion of uncertainty as to the total costs to be paid by the consumers.

CHAPTER XII

FINANCIAL STABILITY

1. Financial standing of utilities. 2. Common stock speculative. 3. Preferred also speculative. 4. New bonds uncertain investment. 5. Right to return undetermined. 6. Uncertain attitude of authorities. 7. Utility demand most certain. 8. Fluctuations reduced to minimum. 9. Plan would improve utility credit. 10. Improved marketability. 11. Depreciation policy source of strength. 12. Equalization reserve financial support. 13. Improvements out of earnings. 14. Great changes impending. 15. Holding company development. 16. Problem of consolidation. 17. Slower but healthier development. 18. Conclusion.

1. Financial Standing of Utilities

If the railroads and other utilities are to function properly, and to attract additional capital when large improvements are needed, they must have a sound financial structure. They inevitably fail in service to the public unless they maintain financial stability. One of the major objects of the proposed plan is to put utility finances on a solid foundation.

Financial stability depends primarily upon certainty of earning power; the latter in turn depends upon the demand for the product and the competitive forces in the particular industry as well as the general economic conditions. All of these factors are highly favorable in practically all the utilities. Their products or services are essential to the life of the community; they are virtually free from competition, and they supply wants which vary little with general industrial changes.

We should therefore expect to find the utilities financially the most stable of all enterprises, with the stability reflected in their credit and in the prices of their securities. But this is not the case. There are great variations, of course, among companies, and the standing of the securities depends upon the condition of the properties, the relations to the public, the earning capacity of the particular company; all the facts that have bearing upon the certainty of the return to be paid. In many instances, however, railroads and other utilities find it difficult to borrow capital or issue new securities on favorable terms, and, with the exception of perhaps most mortgage bonds, utility securities are regarded to a large extent as speculative, and have a low standing in the investment market.

2. Common Stock Speculative

The speculative character of utility common stocks is generally acknowledged. Their equity in the properties is mostly uncertain, and their right to a return is undefined. Like stocks of unregulated concerns, they are merely entitled to the balance of earnings after all operating expenses and fixed charges have been met. But with the utilities this balance depends upon the rates allowed by the regulatory authorities; and the latter are compelled frequently to change the rates even though the earnings have reached a certain equilibrium. No one knows at any point what the prospect of the common stock is as to return, because the earnings above expenses and fixed charges are uncertain. The return is too speculative.

It is because of this uncertainty that utility stocks of even substantial earning power command low prices in the market and are subject to wide fluctuations. Doubtless in many instances if an appraisal were made of the properties, and the rates fixed according to the plan suggested, the stock would be well supported by the return, and would reach a high and stable market value. But because of the uncertainties as to the basic right to earnings, and because of the unwieldly manner of rate adjudication, the prospective earnings are discounted at a high rate, resulting in low and rapidly fluctuating market values.

3. PREFERRED ALSO SPECULATIVE

The uncertainty characterizing common stock, prevails to a large extent also in the preferred. In a large proportion of cases where preferred stock has been issued, its basic rights have not been established. While on the face it is entitled to a given rate of dividend prior to payment on the common stock, it has no adequate assurance that such dividend will be obtained. The dividend depends wholly upon the momentary earnings of the company. It does not constitute an obligation to be paid through rates charged for service. It has no fixed permanent rights.

The right of the preferred stock to a return from the public is undefined. Consequently, although in a given case dividends may be paid, a commission may at any time reduce the rates, with a consequent decrease or entire discontinuance of dividends. Because of this uncertainty as to basic rights, the prospective income is discounted in the market at a high rate with the result of relatively low market values. It is highly probable that if the rights of investors were clearly determined through an appraisal, most of the existing preferred stocks would be found entitled to a return. Then their earnings would be safeguarded and the uncertainty of return would be eliminated. In all such cases the preferred stock would become a high grade investment. The certainty would result in discounting future dividends at a much lower rate with consequent much higher market values and the elimination of extensive fluctuations.

4. New Bonds Uncertain Investment

For the most part mortgage bonds of utilities constitute safe investments, and are rated accordingly. But in many instances even the rights of mortgage bonds do not stand out sufficiently clear to safeguard the interest payments.

Mortgage bonds have, of course, a prior claim to the net earnings of the corporations. In most cases they are amply safeguarded, so that even with our unsatisfactory methods of regulation the interest is practically assured. Where this assurance is virtually absolute, the bonds rank as prime investments and are available for savings banks and trust funds. They are the choice among investors next to municipal and government bonds; they have the highest market value in relation to their return and are subject to the least fluctuation in prices. Their high financial position reflects the fact that they represent basic necessities for which there is such universal demand that the interest payments are likely to be earned under almost any possible shift in business and industrial conditions.

All utility securities ought to be vested with the same certainty of return. The fact that the services are public essentials safeguards the demand for them through changing industrial conditions. Consequently, during a period of depression, the earnings can be maintained even in the face of heavy losses in other industries. Because of the essential character of the services, the returns on railroad and other utility properties could be maintained even through the difficult years, if only the basis of the return to which the investors are entitled were clarified.

Unfortunately, during recent years even mortgage bonds have been issued under commission authorization without clear basic rights as to return. In such cases new bonds were issued and added to existing securities, all without a determination of the amount of investment on which a return should be allowed. There are numerous cases where such new bonds have represented actual additional investment and should have been entitled to an absolutely certain return, but because they were merged with outstanding bonds they assumed the same uncertainties as the prior issues. Consequently they acquired the character of speculative securities.

One of the chief purposes of regulation is certainly to safeguard investments, but this has been largely defeated. It is a grave reflection upon our system of regulation that hundreds of millions of dollars in bonds have been issued under commission supervision without securing for them the highest investment standing.

5. Right to Return Undetermined

Thus, most utility securities reflect the lack of certainty as to continued earning power. This uncertainty is occasioned, first, by the fact that the right to a return has not been definitely determined; and, second, by the ever threatening action of the regulatory powers that might affect the earnings.

The first of these uncertainties has been discussed in connection with valuation. It will be considered here only in its relation to security issues and the stability of their prices. Under our plan all the existing properties used in service would be appraised and a definite rate base established. This would be taken upon the books of the company as the sum entitled to a future return so that the rights of the company would be exactly defined and shown.

Against the total valuation would stand in order the various grades of bonds, the preferred stock, and finally the common stock. The equity and right to a return of each security would be fixed once for all. Whatever this particular return, it would be a certain amount, safeguarded by the entire machinery of regulation. All the securities, bonds and stocks, would assume the investment character to which they are entitled.

6. Uncertain Attitude of Authorities

The second uncertainty, possible action by the authorities, has caused violent fluctuations in security prices. Since the valuation and rate of return are fluctuating quantities, the commission may at any time institute a rate hearing and reduce the net earnings. This has happened again and again where high returns had been obtained, and the value of the securities, particularly of the common stock, had been determined on the market accordingly. With an agitation for a reduction in rates, the commission would start an investigation and immediately there would be a sharp decrease in the value; then after it had announced its decision, there would be an adjustment in the market price to the prospective earnings under the particular rates authorized. If the new schedule of rates proved to be inadequate to support the previous dividends, there would be a decline in the market price. But if the schedule was not acceptable to the company and was attacked in the court, then again there would be fluctuations according to the expected outcome. A court decision favorable to the company would produce a sharp increase in value, while an adverse decree would send the price downward. Any action or prospective action by commission or court would affect the value. The uncertainties of rate adjustment have thus furnished one of the strongest speculative elements in the securities.

Often, after rates have been fixed, there is a development of business, or institution of economies, or reduction in the cost of materials and wages, with the result of a gradual increase in net earnings available for the stock. In such a case there is a gradual increase in the market price, but with wide fluctuations. Then as time goes on, the fact of expanding and excessive earnings is gradually realized by the public, and a new movement for rate reduction sets in. As this movement gains force, there is consequent fluctuations in the price of the stock. When finally commission action is started for reconsideration of rates, an immediate slump in prices takes place. Once more follow long proceedings and litigation, with market oscillations. When at last new rate schedules are announced, there are again adjustments to the new conditions.

An important element in the uncertainty of commission action is the attitude of conflict inevitably created by present methods between the public authorities and the utilities. There is a constant tendency to mutual suspicion and misinterpretation of motive. With the emergence of cross purposes security prices fluctuate; and at all times relations are strained and reflected in the market.

These conditions inevitably render utility securities speculative. But under the proposed plan, the return to which the investors are entitled would be definitely determined. The amount payable to security holders would be unaffected by rate changes. The accounts would show whether the return is being realized, and rates would be adjusted according to undisputed facts under constant commission control.

Under the plan the rights of the investors would not be governed by temporary earnings realized from the particular rates in effect during a certain period. There would be provision for equalization of return from year to year. The purpose would be to make rates in the aggregate high enough to yield the required return. But if during any year the earnings exceed the requirement, the balance would go into a designated reserve out of which would be paid deficiencies in subsequent years. If in any case no past accumulations exist and if the earnings are insufficient to pay the stipulated return, the commission would make immediate adjustments.

Thus there would be not only a definite determination of the rights of the investors, but commission action would not enter as an element of uncertainty. The investors would be entitled to a given return which would be automatically safeguarded by the entire machinery of regulation, provided the rates can be made high enough to bring the return.

7. Utility Demand Most Certain

There would be only one risk element left for the investors, and that is whether or not the particular property would be able to pay the return required. The plan does not propose an iron clad public guarantee of interest or dividends. It assumes that each property shall be self-supporting, and that the rates paid by the consumers shall be adequate to cover the entire cost of the service including the return. But it does not guarantee the return if the investment cannot be made self-sustaining.

In the great majority of cases there would be no difficulty in fixing rates high enough to pay the entire return. Since we are dealing with public necessities, there is a great fixity in service demand. In ordinary competitive business, especially where the services or commodities are not essential, there is a more elastic demand which is materially affected by the price charged; a comparatively slight increase or decrease in price may result in a large decrease or increase in demand for the product or service. In the public utilities, however, a moderate increase or decrease in rates does not affect materially the demand for the service. Within wide limits rates can be altered without substantial changes in demand. It is this fact which would practically assure the return, if only its basis were determined and requisite machinery for its payment were established and maintained.

But we do not propose a guarantee of the return to be paid out of taxes if a particular utility cannot be made self-sustaining. The investors are to bear the ultimate risk of whether the rates can be made high enough to pay the stipulated return. There would doubtless be some cases where the assumed fixed condition of demand would not prevail. Although the rights of the investors would call for a specified return, the amount may be impossible of realization, whatever rates are charged for service. In such cases, of course, there would be an inevitable loss to the investors. The deficiency would not be payable through taxes.

The plan, however, involves careful supervision by the commissions of all utility investments. Before any improvements are authorized and new securities sanctioned, a basic consideration would be to determine the requirement of the new facilities, particularly whether the additional burden of return could be borne by the consumers. The responsibility would rest on the commissions to pass judgment upon this fundamental fact.

It should be clear, however, that cases where the stipulated return cannot be earned, would be exceedingly rare. In the valuation of existing properties, the commissions should take care not to set up figures that exceed such a maximum earning power. And subsequently no additional investment should be authorized without prior determination whether the required additional return can be realized. With this responsibility upon the commission, and with the normal stability of demand for service, in the great mass of utilities there would be no question but that the requisite return would be realized. Except in few extreme cases, the securities outstanding would all come into the highest investment class. There would be the greatest degree of certainty of return, and consequently the narrowest fluctuation in market prices.

8. Fluctuations Reduced to Minimum

Under our proposal, practically all public utility securities would be raised to the preferred class, with the highest investment standing, suited for savings and trust funds. The fundamental factor which makes a high grade investment, is certainty of return, including safety of principal. We propose to make this factor dominant to the highest degree in all utility securities.

The plan provides for a more regular and certain payment to the security holders than prevails in any other investments, except municipal and other public bonds. The risk element is all but eliminated. While, as explained, there is no final guarantee of payment, still the policies and methods would safeguard the return to such an extent that for all practical purposes the ordinary business risks would be absent. A bond or a stock once issued under the authorization of a commission, would bring a uniform and regular return, and every possible public effort would be made to safeguard the investment.

The only fluctuations in prices of utility securities would be due to the changing interest rates as determined by market conditions. Such changes are unavoidable and they inevitably affect all market values whether they are United States government bonds or other gilt edge securities. We cannot escape the general economic law that at any time the value of a security represents all of the future expected payments discounted at the prevailing market rate. If this rate goes up, the future returns are discounted at the higher rate, with the result of a smaller value. And if the rate goes down, the future returns are discounted at the lower rate, with the result of a higher value. But under our proposal the two chief factors of present fluctuations in utility security prices would be eliminated. There would be no further uncertainty as to the basic rights of any class of securities, nor as to commission action in relation to the return to which the investors are entitled. But to the extent that fluctuations in market prices of outstanding utility securities depend upon current changes in market interest rates, they simply cannot be avoided.

9. Plan Would Improve Utility Credit

While the new securities would be issued on the basis of the prevailing market rate of return, the elimination of practically all risk would affect greatly the demanded rate. The factor of certainty would place the issues upon the highest investment level, and would establish the lowest relative discount rate for the expected returns. Risk is one of the controlling factors in the rate of return required; the greater the certainty the lower the rate of return demanded; and the less the certainty, the higher the rate of return.

According to the fact just stated, the plan would affect very materially the rate of interest demanded on public utility securities. The high certainty of return would obtain the issue at the lowest interest rate, would procure the maximum price, and would place the minimum burden on the consumers. Moreover, it would limit the range of fluctuations during the course of basic changes in the market. As the interest rate shifts with changing economic conditions over a period of time, in most of the industrial securities this variation itself affects the certainty of whether the returns will be paid, and thus creates a secondary factor in market fluctuations. But under the proposal the certainty of payment would become practically fixed and would scarcely be affected by a change in the market rate of interest. Consequently, the fluctuations would be greatly narrowed, representing only the change in the market rate without affecting the certainty of the return itself.

10. Improved Marketability

The plan would affect the market also by making possible a much better machinery for the sale or distribution of utility securities. This would reduce materially the cost of financing and in turn would reduce the burden placed upon the properties and the consumers.

At present, the risks pervading the utility securities naturally affect their marketability. Because of the wide variation in the uncertainties of the different kinds of issues, there is no general public utility market.

The marketability of each security depends upon its own circumstances. If a particular bond or stock is of a high character it meets no difficulty in finding underwriters and reaching the ultimate investors at moderate costs. But if it is of a relatively unknown company or if its earning power is less established, it finds underwriters elusive and the expense of issue great.

Under the plan practically all public utility securities would have such high certainty of return that the major difficulties of financing would disappear. They would all find a ready market at the minimum cost and at the lowest rate of return. An individual company would be freed from the task of shopping about for a financial house to underwrite the issue. Practically every company would readily find underwriters to take a proposed issue, and the cost of the financing would be greatly reduced. The improved marketability in turn would add to the stability of the security values and in lower cost to the companies.

With the establishment of certainty in the whole range of railroad and other utility securities, the commissions themselves might co-operate with the companies to obtain central agencies for the sale and distribution of new issues. A system of organized markets could be readily developed. Co-ordinated distribution centers could be placed in every important financial market, connected with all the leading distributing agencies. With such an organization there would be little need for extended individual investigation of particular issues. The commission's authorization would mostly be sufficient assurance for their investment standing. When approved by the commission, they could be taken directly by the distributing agencies and sold to the ultimate investors at small expense. The net rate of return payable by the consumers would be greatly reduced by the improved organization, and the financial stability of the corporation enhanced.

11. Depreciation Policy Source of Strength

Aside from introducing definiteness of equity and right of return, the plan would promote financial stability also by requiring or making more feasible the accumulation of reserves which would greatly strengthen the investment.

One essential feature of the plan is provision of adequate reserves for all depreciation of the properties and for contingencies that may arise in connection with operation. The policy and methods by which systematic depreciation provisions would be made have already been sufficiently described in Chapter VII. But it is worth noting that the reserves would add materially to the certainty that the properties will be adequately maintained and that the returns promised on the securities would be paid.

It should be clear that a corporation which has accumulated sufficient reserves for all classes of depreciation as well as all reasonable contingencies, is in a much stronger financial position to safeguard its security holders than one which has provided merely for the necessary current repairs and renewals of properties. The accumulation of reserves would not give the security holders any direct immediate advantage, nor impose a penalty. It would give the holders no more nor less in return, but over a period of time would add greatly to the certainty that the return actually would be paid. This added certainty is an advantage which would help to place and keep the utility securities on the highest plane of investment. The lack of reserve has often impaired the value of the securities.

12. Equalization Reserve Financial Support

The plan provides also for the equalization of the return. The use of an equalization reserve has already been described. Here the purpose is merely to point out that keeping such a reserve would add greatly to the certainty that the payments of the full return will be made, and would thus contribute to the financial stability of the company.

Even in railroad and other public utility properties there are substantial fluctuations in earnings from year to year with changing business conditions. Consequently, financial stability is enhanced if an adequate reserve is accumulated during prosperous years for the payment of the return during a period of depression. If such an equalization reserve is not provided, then practically each year the rates would have to be fixed high enough to pay the required returns for that year. During general prosperity, there would be a larger volume of business, so that the range of costs would be relatively low and the rates charged to the consumers low. But during depression, there would be a loss in the volume of business, so that the joint overhead costs would have to be borne by the smaller volume, and rates would have to be increased. This would mean low rates when least needed, and high rates when most burdensome to the public.

Without an equalization of return the commission would frequently find itself in the position of ordering higher rates during a business depression when the increases would be particularly burdensome upon the public. In many cases it would be difficult, if not impossible, to impose increases during such periods. Without an equalization reserve there would still be an element of uncertainty, which might affect materially the financial stability of the company, the value of the securities, and the rate of return required. The plan, therefore, assumes the establishment of such a reserve, which would also provide stability in rates and would prevent frequent rate adjustments.

At present one of the factors of instability is the fact that each year must practically stand by itself. The earnings of favorable periods become outright the property of the investors and are subject to distribution among security holders. Then during poorer years the companies may be unable to sustain the previous earning power and compelled to reduce materially the payment of dividends, with danger even to the interest obligations. This produces fluctuations in bonds as well as stock values, and requires a higher rate of return on security issues.

There are, of course, conservatively managed corporations which on their own responsibility maintain the kind of financial safeguards that have been outlined. These companies have accumulated large reserves and sufficient surplus to provide ample equalization funds, and they maintain the same dividend payments during prosperous years and periods of depression. This is an admirable policy, and our purpose is to make the practice general among utilities. It would eliminate another risk element which prevails in most industries, the fluctuation of return from year to year, and there would be greater financial stability.

The accumulation of equalization reserves, it should be clear, would give the investors no direct advantage. It would give them no more than they are entitled to in their contract with the public. Its sole purpose would be to add to the assurance that the payments promised in the issuance of securities will actually be made without regard to changes in industrial conditions. It would be subject to strict accounting, so that the public could not be penalized for the accumulation of the reserve, and the investors would not receive an undue advantage.

13. Improvements Out of Earnings

The plan facilitates also the making of improvements and extensions out of earnings without giving any direct financial advantage to the stockholders. It would enable the public to build up the business.

An important criticism against regulation has been that the policy of making improvements out of earnings has been discouraged and largely discontinued. In unregulated business, particularly with the large industrial corporations, the practice is common to set aside a considerable portion of each year's earnings for reinvestment in improvements and extensions. Undoubtedly a very large proportion of the savings of the country and of the new capital investments are made in this way.

We must admit that among railroads and other public utilities this policy has almost disappeared. Where it has been pursued, it has been mostly in an indirect way, covered up by the methods of accounting. In some instances excessive earnings under given rates have been hidden by the deliberate practice of the companies to charge improvements to operating expenses. In this way the properties have gradually been built up out of earnings without any direct showing of reinvestment of surplus. In such cases the expectation has usually been that subsequently the improvements would be recognized in a valuation for rate purposes. By such a course the rates would be maintained at a high level over a period of years. Later, however, these very improvements would be claimed in the valuation and urged as a reason for continuing high rates to support the investment made by the consumers through excessive charges to operating expenses and understatement of profits.

This, of course, is not square dealing, and where it has occurred the practice has inevitably aroused public opinion against the companies. The reasonable course is to provide directly a clear-cut system for financing improvements out of earnings and defining exactly the rights of investors. Rates could be fixed high enough not only to bring the stipulated return and make adequate provisions for all reasonable reserves, but to provide an additional surplus to be invested in permanent improvements for the extension and betterment of service. But the accumulation of such a surplus would stand out directly as a policy established by public authorization. The amount would appear definitely in the accounts, and it would give no direct advantage to the stockholders, who would get only what they are entitled to under the terms of the securities. It would stand by itself as a direct investment by the public and would not be included in the rate base upon which the public is required to pay a return. It would stand as a contribution reserved for the public.

But there would be an important indirect advantage to the security holders in the accumulation of such a surplus reinvested in properties: the additional assurance that the promised returns would actually be paid. The public itself would be furnishing additional capital upon which no return would be required. This public investment would protect the equities of the outstanding securities and would place them in a safer position. While it would not add to the amount of return, it would make the payment more secure. It would add to the financial stability of the corporation, prevent fluctuation of prices of the outstanding securities, and obtain a lower rate of return on new issues.

Whether such surplus should be accumulated would be purely a matter of public policy. It would not be required under the plan, but it could be readily carried out by the machinery so as to safeguard the public investment without direct advantage to the security holders.

In most cases it probably would prove desirable to finance out of earnings all ordinary additions due to normal growth of business and to provide the larger improvements through the issuance of securities. In an established community, the additional capital requirements from year to year to take care of the normal increase in service, would probably not exceed two or three per cent of the existing capital. If paid for out of earnings they would cause only a slight increase in rates and would place no great burden upon the consumers. The public would mostly not object, we believe, to such a practice provided that the security owners gain no direct advantage. The policy would, however, add greatly to the safety of investments and result in unmatched financial stability of the utilities.

14. Great Changes Impending

The effect of the proposed plan upon financial stability assumes special significance when we consider the tremendous technical progress taking place in the utilities, which is bringing about far-reaching reorganization, will result in extensive reconstruction of the properties, and will demand huge sums for new financing.

These technical advances have taken place more particularly in the production and transmission of electricity, which we shall consider for the purpose of illustration. During the past fifteen years large generating units of 35,000 k.w. to 65,000 k.w. capacity have been developed compared with about 5,000 k.w. maximum in 1905 and about 10,000 k.w. in 1910. This development, coupled with other power plant improvements, makes possible the construction of a modern power plant, with huge generating capacity, at a much lower capital outlay per unit of capacity, together with a greatly reduced cost per unit of output. During the same period high tension transmission lines have been improved so as to carry tremendous loads with small percentage of loss and at sufficiently low cost to permit distribution over wide areas from a central point of production.

These great changes in facilities have brought about an upheaval in the entire economic situation of the electric business. Previously the industry was developed on a decentralized basis. For the most part each community had its own company producing and distributing electricity, and in large cities often several independent companies supplied the service.

But the technical advances have changed the situation. The entire industry is in the process of reorganization. The decentralized and independent small companies are being replaced by co-ordinated systems, which can take advantage of the economies of large scale production coupled with distance distribution. The detached small companies are gradually being brought together into bigger units, and ultimately will be replaced by huge systems, if not by the much discussed super-power plan, which can take the maximum advantage of production and the development of high load factor.

15. Holding Company Development

The truth is that to a large extent the present form of organization, as well as the existing generating plant, is obsolete and must be replaced according to present economic requirements. But the readjustment, because of the chaotic condition of regulation, is greatly retarded, is made with difficulty, and will add still further to the uncertainties of the future earning power permitted by the commissions.

The reorganization is taking place to a large extent through the development of "holding company" groups. One company acquires and "holds" the common stock of a number of local companies and through the consolidation is able to combine their demand, and supply current from a central station. By this unification it is able to scrap all the small local plants and replace them with a large plant of modern efficient units. It thus realizes the direct economies of larger scale production and, besides, obtains the indirect advantage of a better load factor. It gets a more even utilization by the combined demand, develops new business along the transmission lines, and is better able to base its rates upon the requirements of the different classes of service. With the total development it is finally in a position to furnish better service at lower rates, thereby creating further demand previously not reached because of the higher rates.

The consolidation of smaller companies into larger "holding company" systems has been moving forward rapidly. The process of combination varies considerably but in the main the holding company is employed as the agency of consolidation. There are many such groups now actively competing with each other in the further reorganization of smaller properties. Large systems have developed each with properties scattered over wide areas, and in some cases the control extends through most of the states in the country. The development has already reached a secondary stage, where smaller groups have been combined into a single large group and we may confidently expect further consolidations into still larger super systems as they may prove financially feasible.

The method of financing the consolidations varies. Usually common stock of the holding company is issued in payment for the common stock of the local companies. Funds for the needed reconstruction of the local distribution properties are provided through the sale of bonds of the local companies, and sometimes through sale of preferred stock to employees and consumers. Distribution is left with the local company. But the holding company provides the new central power station and the transmission lines, or it may organize a special subsidiary company for the purpose. To provide funds it issues its own bonds or those of the special subsidiary with a mortgage on the properties, and usually issues also collateral trust bonds based upon the common stock of the local companies. In one notable instance an equipment manufacturing company controls the consolidations and the financing, and in most cases engineering and management firms, or financial houses, promote the combinations, provide for the financing and look after the reconstruction and management of the properties.

16. Problem of Consolidation

The development is undoubtedly justified on economic grounds. The holding company groups can furnish better and cheaper service than the small independent local companies. We have to do with the same economic force which a generation ago brought about the consolidation of street railway properties and other municipal utilities.

We look with favor upon the consolidation itself, but have misgivings about the financial foundation. In most cases the common stock of the local company probably exceeds the "fair value" for rate purposes and is acquired by the holding company at an excessive price. The competition for purchase among holding company groups is keen, and each expects that the prevailing service rates will be indefinitely continued so as to pay not only the existing fixed charges but also the return on the new securities, together with profits to the holding company, the management, and the underwriters. Consequently the price for the existing properties is almost necessarily higher than justified for rate control, so that the consolidation is based upon an unstable financial foundation.

The tendency of the consolidation under present conditions is inevitably toward overcapitalization, just as in the case of the earlier municipal utilities. First, the stock of the local company is likely to be watered; and in practically no case had its "fair value" been determined. In the second place, the price is bid up largely on the basis of expected economies from the combined production and management. And, finally, a large proportion of the acquired properties are scrapped and replaced with modern facilities, requiring new capital and return on the additional securities issued. The final burden of fixed charges and expected return, therefore, is likely to consume the bulk of the savings from consolidation even at the then prevailing rates.

What, then, is likely to be the future financial situation of the system? The speculative elements which we have decried will manifestly be intensified. The future earning power of the holding company stock is extremely uncertain and subject to wide fluctuation. The risk of rate reductions is especially great in the face of the more economical production and distribution. If the commission regards merely the new properties and fixes a return accordingly, it may destroy the entire value of the stock. And in fixing rates for the local company, it may not leave sufficient return to pay the interest on bonds, since a large proportion of the earlier properties have been scrapped. It may even destroy the value of new securities issued for reconstruction. The conditions will vary greatly from one system to another, but in no case are the rights of investors sufficiently safeguarded to assure stability and prevent wide fluctuation in security prices.

In some instances common stock or even bonds of the holding company based upon the common stock of the subsidiaries, are offered to the public as particularly safe investments because of the wide distribution and consolidation of risk of the combined properties. While, of course, the single security is more stable than would be that of any one of the subsidiaries, nevertheless the fundamental earning basis of the entire structure is undetermined and the proffered safety depends entirely upon the probable lack of future action by the rate making bodies. Such consolidation of risk can hardly be recommended as a desirable basis for security issues. It does not furnish the kind of stability that the promoters pretend to offer to the investing public.

17. Slower but Healthier Development

If our proposal were adopted all the uncertainties would be eliminated, and the consolidations would rest throughout upon approved "values."

If the return on a local company's property had been previously fixed, this would be allowed subsequent to the consolidation—neither more nor less. The holding company would know definitely what returns to expect from the consolidation and what price it could afford to pay for the properties. After acquisition, it could scrap any existing plant and equipment and provide any desirable new facilities, but it would obtain only the stipulated return on the acquired property, plus the return on the new securities issued for reconstruction. This would obviate all risk elements and would introduce no uncertainties into the financial structure.

It may be argued that by eliminating all possibility of high speculative returns the plan would interfere with a powerful motive which creates the zeal to bring about the consolidations. We may as well admit that the adoption of the proposal would leave little room for the speculator, who has been rather assiduously employed in the movement. In so far, however, as unification is prompted by speculative profit, it serves to pile up costs, postpones the time when the economies would benefit the public, complicates the problems of regulation, in many cases steers its course to destruction, and in any event intensifies financial instability.

But where consolidation is based entirely upon economical grounds under commission control, it would invite investment, and would appeal just as powerfully to engineering and equipment interests. The movement might proceed at a slower pace but ultimately would make greater and more permanent progress for both investors and the public. There would be no unwarranted profits or unfortunate losses. There would be no creation of artificial market values subsequently to disappear in economic realities.[1]

18. CONCLUSION

The electric utilities have merely been used as an illustration, but the same tendency is observed in city

[1] Since these pages went to the printers the Report of the Giant Power Survey Board to the General Assembly of the Commonwealth of Pennsylvania, has been published, and it discusses the problem of electric consolidations practically along the lines of this chapter. Governor Pinchot's recommended legislation seeks to meet the problems substantially as here proposed. See note, Section 10, Chapter IV, and Preface.

and interurban electric railways and other utilities. The consolidation of various steam roads, about which we have been hearing so much lately, can be carried out with permanent financial success only if the plan is applied before the reorganization takes place.

The Interstate Commerce Commission has been granted authority to co-operate with the companies in effecting desirable consolidations. The same right should be granted to local commissions. Finally it may prove beneficial to compel consolidation even in the face of opposition from the companies.

The longer we delay the adoption of a systematic policy of regulation, the more complex the problem when we eventually face it. The present confusion and uncertainty will pile up; regulation will become more and more bunglesome and ineffective. Many legitimate investments will be impaired or destroyed. The financial complications will be intensified, and ultimately our neglect will burden the public with higher rates and poorer service. Moreover, those who object to regulation itself as being an unjustified interference with business should not be deluded with the idea that it would be given up because of its difficulties. It is practically certain to go on, perhaps becoming more confused in the struggle with confusion. Unwieldy as it is, it will not be given up; but it may yield to a control far less attractive to its opponents than scientific regulation, as here outlined. It is too late to question the desirability of control altogether. Our problem should be entirely centered on the means that would provide definiteness of rate base, certainty of return and service, and financial stability of the utilities.

CHAPTER XIII

EFFECT UPON SERVICE AND EFFICIENCY OF OPERATION

1. Profit motive hampered in utilities. 2. Direct evidence lacking. 3. Simplicity of control favorable. 4. Elimination of friction. 5. Comparable records as a check. 6. Plan works for co-operation. 7. No unnecessary interference contemplated. 8. Interest shifted to service. 9. Study of rate schedules. 10. Systematic valuation data. 11. Intercommission co-operation. 12. "Work" motive and "money" motive. 13. Capital and management. 14. Special rewards for special service. 15. Shaping of labor policy. 16. Control of wages and strikes. 17. Conclusion.

1. Profit Motive Hampered in Utilities

One of the chief criticisms against regulation in general has been that it tends to inefficiency of operation. It is therefore pertinent to ask whether the proposed plan would be likely to alleviate or to aggravate this assumed tendency.

In ordinary business of a competitive character, the desire of maximum profits is generally viewed as the principal force for progress. In their eagerness for profits, the owners of a business are supposed to put forth their utmost efforts for the elimination of waste, the installation of better facilities, and the extension of their activity. Moreover, they are promptly punished with monetary loss or failure if they slacken their efforts or make mistakes in judgment.

But in the regulated industries we have put a curb on profits, allowing only a moderate return on the investment, while at the same time the public is practically compelled to pay rates that yield a fair return. Thus, the ordinary motives that are thought to make for efficiency, desire of big profits and fear of loss or failure, are largely eliminated in the utilities.

2. Direct Evidence Lacking

We frankly admit that there seems to be a basis for this criticism. It probably is true that regulation has interfered with progress and that greater improvements and better methods would prevail if the companies had been free to fix their own rates and make whatever profits they could. Perhaps the public has paid rather dearly for the meager protection obtained through rate regulation. But in spite of the fact that active control has been in force for a period of nearly twenty-five years, there is no conclusive evidence of greater retardation of efficiency in the utilities than in unregulated industries.

Since 1900 tremendous advance has been made in railroad and other utility operation. This is so obvious that it requires no proof. It is not at all certain that greater advances have been made in unregulated industries. We have no statistical data which demonstrate that utilities as a class are operated at lower standards of efficiency than competitive enterprises. Nor is there clear proof that if it were not for regulation greater progress would have been made.

3. Simplicity of Control Favorable

But whatever the effect upon efficiency of operation, rate regulation and other immediate control of utilities are practically certain to remain as the established policy. These industries are so important in every day life that in all likelihood they will never be free from supervision. Whatever retardation upon progress may result from interference with the profit motive, they will never be allowed to fix their own prices like ordinary business corporations. Assuming that because regulation interferes with the profit motive it does tend to hamper efficiency, we face the question whether the proposed plan would intensify this tendency or counteract it.

We believe that the very clarification of policies and methods would result in better management. Under existing conditions, a company would be naturally tempted at times to pad its operating expenses to cover up large earnings and prevent a reduction in rates. It realizes that when a reduction has once been made a subsequent increase is difficult to obtain and therefore might resort even unconsciously to uneconomical use of labor, materials and equipment in order to swell its expenses.

Under our plan the rights of the company would stand forth clearly. Increases or decreases in rates could be readily obtained. It would receive in any event the stipulated return, and could not profit by maintaining higher rates than justified by the legitimate cost of operation. Hence there would be no advantage in retaining inefficient methods of operation and padding operating expenses.

The automatic control of costs and return would, on the other hand, free the commissions from endless labors of valuation and litigation. They could therefore devote themselves to the promotion of efficiency in co-operation with the companies. The same technical staffs that are now employed in constant rate proceedings could devote their efforts toward improved methods of operation and service.

4. Elimination of Friction

The elimination of the continuous friction between the public authorities and the companies would in itself be a potent factor for greater efficiency.

Under the existing system, co-operation between the commissions and the companies to promote economy of operation has been well nigh impossible. The incessant conflict over rates engenders ill will and cross purposes that strangle all desire and impulse for co-operation. It has aroused mutual distrust and antagonism. It has created an atmosphere of suspicion, in which the public is led to see nothing but avarice on the part of the companies, while the latter can see only demagogy and self-seeking among public officials. It has rendered both sides myopic and has kept them concerned chiefly with strategy of fighting and not with problems of improvement in operation and service.

Under present conditions, even when a company makes striking advances in service and efficiency, it is not likely to get recognition for its efforts, and may still be subject to public suspicion and hostility. As a matter of fact, whatever may be said of the financial control, in most cases the operating organization is interested primarily in improvement of service and management. The men in charge of operation are usually trained engineers or other experts whose chief interest and pride is in the properties and the physical results of their work. Unfortunately they are often hampered by shortsighted or perverted financial control, but as to fundamental motives they are primarily concerned with progressive excellence of service. They are actuated by professional standards and are thoroughly imbued with the feeling of public interest and responsibility. But they are thwarted to a large extent by the endless conflict between the financial interest of the company and the public. They are all but driven into an antagonistic public attitude, with smothered efforts at progress and accentuated feeling of futility.

If once the financial conflict between the public and the companies were settled, successive rate adjustments would arouse no animosity on either side. Rates could be reduced without company opposition, and increased without public apprehension. The cause of hostility and distrust would be removed. Then there would be not only time and energy but a disposition to co-operate on matters of improvement in operation and service.

5. Comparable Records as a Check

The requirement of the plan to keep all records of the various companies on a strict cost basis, would obtain uniformity of classification and comparability of results. It would thus enable the commissions to make comparative analyses and to recommend improvements to the less efficient organizations. It would make them clearing houses of information.

At present many of the accounts are useless with all their attempts at detailed statement, because the fundamental data presented are unreliable. This is the case particularly, as shown earlier, with the capital accounts. At the same time the operating accounts and statistics have either not been sufficiently worked out, or, because the commissions have been so busy with valuation and rate matters, have not been adequately analyzed.

As a result, progress made by an individual company is usually not available to other corporations. The one that develops an improved method may indeed strive to keep it hidden in order to gain an advantage over others and to realize special profits from its isolated use. But if the commissions were actively co-operating with the companies to bring about economies, progressive methods employed by one company would be passed on to others, to the general advantage of the public.

For example, if analysis of the records filed with the commission showed that one company produced electric current at a low unit cost compared with other companies, an investigation would be made into the cause of this favorable showing. It may be due to an exceptional situation which cannot be realized by others. But if it is due to good organization or equipment, the commission could immediately extend the improvement to the other companies, and bring about a general reduction in costs.

If, conversely, an analysis of the records discloses the fact that a particular company produces at an exceptionally high unit cost, there will again be a special inquiry into the reasons. There may, of course, be peculiar circumstances that subject the given company to higher costs. But if the conditions can be remedied, the commission in co-operation with the management would bring the costs down in line with those of other companies.

6. Plan Works for Co-operation

This direct co-operation with the companies would be a natural development under the plan, because the commissions would exercise complete control over all improvements, extensions and additions.

In most states the commissions have already been vested in part with the power of supervision over improvements, extensions and additions to the properties. But the power is usually too limited, and can be exercised only under special circumstances. In the State of New York, for example, the commission has the opportunity of passing upon the reasonableness of such construction only when a company applies for an issue of securities to obtain funds directly for that purpose. But if the company already has funds for the immediate expenditures, or is in a position to borrow on short term loans, it can proceed on its own initiative and responsibility to make the improvements without approval by the commission. Subsequently, it may appear before the commission with an application for the issuance of securities to reimburse its treasury for the expenditures already made. Then the commission's authority is practically limited merely to the question of whether the payments were made or whether the amounts were reasonable. But for the most part, it can make no inquiry as to whether the construction itself was desirable.

At the present time, in the great majority of instances, the commissions practically exercise no authority over the wisdom of proposed extensions or improvements. Yet after the expenditures have been made, the companies naturally expect to have the investment safeguarded through the rates charged for service. Often huge sums are thus finally approved which would not have obtained prior authorization.

Under the plan the commissions would be compelled to authorize rates which would bring the stated return on the actual investment, but to safeguard the public against unwise action by the companies, they would have full jurisdiction over all new construction. Before any substantial extensions are made, the approval of the commissions would first be obtained to determine the wisdom of the investment.

Thus, in any event the commission staff would be in constant touch with the properties and would be in position to promote special co-operation with the companies. The analysis of the filed reports would be supplemented by this close contact with the operating facilities and officials. The commission would therefore be able to aid more readily in the introduction of efficiency.

7. No Unnecessary Interference Contemplated

Objection may, however, be made that such direct efforts by public authorities for the promotion of efficiency and strict control of all construction would result in undue interference with the management; that regulation would assume the rôle of management.

Under existing law there is the general assumption that the commissions should not interfere in management and direct problems of operation. But in spite of this theory, the fact is that commissions have interfered all along, do interfere now, and inevitably must share in questions of management. The dividing line between supervision and operation is in any event shadowy and shifting. The two are not always distinct functions. Regulation necessarily impinges upon management. They have to be co-ordinated for the maximum promotion of the public interest.

The proposal is not that the commissions should assume the ordinary direction over the individual companies. The latter in each instance would have the immediate responsibility of operating the properties and maintaining the most efficient organization for the purpose. They would also have the duty to determine in the first instance what improvements and extensions should be made, and to place periodically their construction programs before the commission for approval. Their engineers, when preparing the program, would be in constant consultation with the commission engineers. Both groups would be intimately acquainted with the properties and the requirements of the community. Consequently they would naturally and spontaneously co-operate in all matters of operation and service.

In the absence of conflicting interests, the relations would as a matter of course be amicable. In most cases, if the commissions discovered inefficiencies, or found possibilities of improvement in the equipment, the organization, or the labor employed, a mere suggestion to the management would usually bring about the desired changes. The contacts would be informal and friendly. Both the commission and the company experts would be interested in the same result,—progress of service, not conflicting financial advantages.

In case, however, a company were unwilling to co-operate, the commission would have the power to determine whether or not given changes are desirable, and to require the company to act. Since the financial interests of the security holders would not be affected, the public authorities should have final control over the introduction of improvements by a given corporation. But the very possession of such power would enable the commission in most cases to obtain the desired co-operation from the utilities.

8. Interest Shifted to Service

The commission's major interest would be shifted to the question of service, of which the direct promotion of efficiency is a part. Its engineers and experts would be in constant contact with the developments of the industries and would seek every practical improvement for better service. They would be free to devote themselves almost wholly to progressive and constructive purposes of regulation. Their constant effort and duty would be to obtain better service at lower cost. And the benefit of all improvements would flow directly to the public without the cumbersome process of existing rate making.

Without attempting to present a detailed and lengthy outline of activity for the promotion of better, more economical and cheaper service, we may briefly indicate the kind of efforts which would be productive of constant improvements. First, the commissions could maintain systematic study of reasonable service requirements, keeping track of what is attempted in communities all over the country, analyzing the experience under the different circumstances, and trying out what seems feasible under the particular conditions. At present, very few commissions attempt to keep abreast with the vast amount of service experimentation even casually, and there is very little of systematically analyzed data.

In line with the preceding suggestion, the commissions should be acquainted with improvements and experimentation with equipment and processes, and with forms and methods of organization. Whenever there is a practical advance available either as to machinery and property or organization and management, the commissions should know the facts and apply them throughout among all the companies that would be favorably affected. They practically do nothing of the sort now, and are very imperfectly informed about the available progress in the industries.

9. Study of Rate Schedules

Along a somewhat different line, as brought out in a previous chapter, a great deal is to be done in the study of rate differentiation and the establishment of scientific rate schedules. There has been a tremendous amount of rate experimentation throughout the country, but the mass of accumulated experience largely remains as undigested data practically useless for application in present rate cases. The facts should be systematically gathered, but constantly sifted, analyzed, and prepared for practical application.

We referred also in a previous chapter to the possibility of the commission's assisting in the floating of new securities and establishing greater marketability. Practically nothing has been done even in accumulating and analyzing the facts as to security issues; to show definitely what returns are paid to investors, what the cost of financing has been, and what has been the best practice in underwriting. By collecting the vast amount of data and digesting them, the commissions at least could advise the companies contemplating new issues, with a reduction in the ultimate costs placed upon the consumers. We have here a great and completely neglected opportunity for progressive action and lower costs to the public.

10. Systematic Valuation Data

In spite of the great mass of valuation proceedings, very few commissions have now available extensive data as to actual property costs incurred under different conditions of installation. There have been endless volumes of figures printed annually, but as to reasonably comparable facts of construction and cost of equipment, overheads, etc., little has been done of a systematic character to serve as a guide for immediate efforts at progress. All the experience with construction and equipment costs under the various commissions ought to be regularly assembled, analyzed, placed upon a comparable basis, and made available for more economical and better service.

All these activities, which are enormously important and have been sadly neglected, are, of course, expensive. They require expert investigation and research, and cannot be done in a casual and secondary way. But they should nevertheless be carried out for the benefit of the public, and their cost apportioned over the greatly benefited public would be negligible.

11. Inter Commission Co-operation

In some phases of scientific research, which may be particularly expensive, there ought to be co-operation between the various commissions, and the cost apportioned widely over the country. For example, in the matter of rate analysis a single organization adequately manned, might well conduct the research for all the commissions, saving duplication and preventing inadequate work. Likewise, the compilation and analysis of cost data, and keeping track of improvements in equipment and processes, might be conducted on an inter-commission scale, with a saving of expense and more efficiently. In any event there are huge possibilities for progressive efficiency and improvement in service which have been mostly neglected and should be actively undertaken for the direct promotion of economy and service.

12. "Work" Motive and "Money" Motive

One of the chief forces in promoting efficiency would be systematic appeal to the public spirit and professional pride not only of the operating officials but also department heads and all other employees.

While undoubtedly the hope of personal profit is important, it is easily exaggerated and is by no means the exclusive force of progress. Anyone extensively acquainted with business organizations, especially with large utility corporations, knows that progressive efficiency does not depend solely or primarily upon profits. The fact is that the men responsible for the operation of the properties seldom participate in the returns realized from their efforts. This is particularly true of those below the highest executive officers. Mostly the departmental heads, engineers, operating experts, superintendents, shop foremen, accountants, are so far removed from the immediate profit motive that their efforts are influenced but slightly by the greater or lesser returns from operation. Among the lower paid workers, the ''fear'' motive probably works more directly than the hope of reward, but no one would look upon threat of losing a job as a progressive force in industry.

While stockholders of large corporations are benefited by progressive management, their influence can be exercised as a driving force through the remote departments only to a very limited extent. They may energize materially the president, the general manager and the chief executive heads, who in turn may affect the chief assistants. But soon the profit influence begins to diminish rapidly and fade away.

But even at the top of the organization, with the president or general manager, it is doubtful whether the hope of profit is really the chief factor in the efforts to promote efficiency. Have the eminently successful men worked primarily to accumulate money, or have they used their great efforts chiefly for the fascination of the work and the interest in the constructive results? This is an important question in the psychology of business, which probably has often been answered with arbitrary emphasis. Natural absorption in constructive enterprise always shares more or less in the force of industrial leadership. Further down the organization the employees are, of course, actuated in part by the hope of greater compensation, but probably the most important force for advancement is their natural interest in the work, their native desire to share in the development and their consciousness of personal identity with the business. These feelings may be affected by financial expectations, but they are native elements and are not created by hope of profits.

We are concerned with the important and far-reaching question of motives in industry. Unfortunately, we do not yet know much authoritatively as to the relative force of the various business motives or how they are combined under different circumstances. During recent years, however, faith in the sheer profit incentive has greatly diminished, and the belief has gained rapidly that future progress in industry will depend relatively much more upon the intangible psychological factors than upon the amount or special method of financial reward.

In the past, business was organized very largely upon the profit basis. It was almost generally assumed that man works for cash alone; a recognition of the so-called ''economic man.'' But the assumption has been increasingly questioned and greatly modified in recent years. The fact has become more clear that men exert their best efforts in all lines of activity when they are naturally interested, not merely in immediate financial gain but in the very work development or creation itself. This is probably the primary force which has produced the tremendous advances during recent years in chemistry, electricity, the various phases of engineering, and in business organization. During the past two decades, technical progress has been due primarily to research experts who have obtained comparatively slight financial rewards, but who nevertheless have devoted themselves with constant enthusiasm to the routine of their exacting labors.

The purpose is not to consider extensively the "work" motive in industry as distinct from the "money" incentive. But we must point out that the more intangible work factor has not been sufficiently regarded in the past, and that we probably have just begun to grasp its significance and its possibilities for future progress. Here we believe is a good force which may be used with almost unbounded success in the direct promotion of efficiency in utility operation. The commission can do a great deal to obtain public recognition for successful effort to stimulate pride in achievement and to advance professional standards. These non-profit factors have been powerful even when they have not been recognized and fostered. They may be greatly strengthened by the direct and conscious effort of the commissions and the operating officials.

13. Capital and Management

Nor is there here a suggestion that the management should not be adequately paid. The salaries of utility officers and all employees should be no less than in other industries requiring the same relative abilities and effort. But adequate personal compensation for the management does not depend upon an unlimited return to the stockholders or to the investors in the business. Besides proper compensation, however, the productive efforts of an entire organization can be greatly increased by proper treatment, adequate recognition and public encouragement.

For our purpose we must distinguish clearly between "capital" and "management." We propose a fixed and limited return for investors or capital, but not for management as such. The latter includes not only the operating officials, but all human effort devoted directly to the utilities. It consists of human or psychological elements and must be treated accordingly. It must be paid right and treated right, then it will respond right; its terms and conditions cannot be once and for all permanently fixed. Capital, however, when once contributed is physical and does not require psychological adjustments. Its return can be definitely fixed and automatically regulated.

Clear separation between capital and management already exists in most utilities. There are comparatively few cases where the stockholders at the same time furnish the active management. The latter usually has very little share in the capital of the business. It is mostly employed by the stockholders at stipulated salaries or wages with little or no share in the profits or returns realized through greater efforts or efficiency of operation. Capital should be dealt with on definite terms, but management must be given the consideration that human motives and efforts require. The commissions should co-operate with it constantly for the improvement of the business. They can exercise tremendous influence in promoting professional and public standards. This force can be brought to bear not only upon the higher officials, but upon all the workers in the industry.

14. Special Rewards for Special Service

In connection with the promotion of professional spirit in management, the commission may work out also special financial rewards to the officers and employees for excellence of service.

But let us make clear that such provisions should be limited to the management as such, and not extended to capital. Heretofore the plans for special reward have been concerned mostly with capital, and very little with the operating organization. We believe that the course should be the other way about. The returns should be fixed for capital, but provisions for additional compensation may be made for the people who are actively concerned with everyday operations. They would recognize meritorious service and would act as a stimulus for continuous progress.

The suggestion to establish special financial rewards is based upon the recognition of monetary motives in effort. If definite standards were established and successfully carried out, progress would be greatly stimulated. Any such system, however, must be carefully studied and worked out. It should rest upon measurable physical performance and not upon vague general considerations. It must follow a clear relation between efforts and results. The experience with various bonus systems and special returns for industrial effort has not been particularly satisfactory. In most cases the difficulty probably has been to measure the results compared with the special efforts put forth because of the promised reward. If the payment does not follow somewhat closely the actual physical performance, the benefits may be derived by those who made no special effort, and the force of the reward is dulled immediately.

In a number of cases special arrangements have been made for profit sharing between public utility companies and the public. For example, in the rapid transit contracts in New York City, after the payment of all operating expenses, taxes and returns upon capital, there is a provision for equal division of the remaining profits between the companies and the city. Similar arrangements have been made in other cities. The purpose in all such cases was, of course, to provide a stimulus for efficiency. As the payment, however, went to capital and not to the management itself, its influence has been too round-about and it probably has not been a significant force for progress in the actual operation of the properties. It is doubtful whether any plan of profit sharing between capital and the public has been any considerable factor in stimulating efficiency. Sharing of profits or bonus should go to the actual management, including so far as possible all the lower officials and the ordinary employees where the incentive would bear directly upon the individuals who daily conduct and carry on the operations. But it is difficult to work out and apply systematically a system of special returns without arousing discontent and thus destroying the expected benefits. If it appears possible, however, to promote efficiency by a definitely worked out bonus system, the commissions should be free to co-operate with the managements, to institute a plan and to realize every possible advantage for the public.

15. Shaping of Labor Policy

Under the plan it would also be feasible for the commissions to co-operate directly with the management in working out proper labor policies and standards.

One of the great difficulties in regulation has been the labor problem with which the commissions have had practically no power to deal directly. Wages, hours of work and other conditions of employment have been determined mostly by the companies. However unwise the policies of particular companies may have been, the commissions have had little or no right to interfere. Unfortunately the policies have been unwise much too often, with the result of not only discouraging the motives for efficiency and retarding progress, but also subjecting the public to interruption of service through strikes.

The commissions are especially charged with public responsibility and they should have full power to deal with labor problems. In most of the utilities, continuous service is a public requisite, and interruption affects seriously the entire life of a community. And yet the companies have been practically free to endanger the community welfare by maintaining low labor standards. The commissions have been all but helpless, however dangerous the conditions, and in the face of strikes they usually can do nothing to protect the public from the results of company stupidity.

We do not mean to charge the companies with responsibility for all strikes, but probably in the majority of cases the final break has followed upon conditions which should not have existed and which reflected unenlightened management. Even where the companies may have been right in resisting specific demands of employees, the strike itself has often been due to the arrogant and uncompromising attitude of the officials, which antagonized the men and led them to extremes. In modern industry co-operation on broad lines is required in all relations, not only between the public and the companies, but also between high operating officials and the organization down to the humblest employee. It is exactly in this phase of co-operation and promotion of efficiency, where many companies have been unprogressive and have not understood modern labor forces and motives. And it is in this line that the commissions have great opportunity of promoting efficiency and protecting the public when the interest of the investors is not involved in the conflict.

16. Control of Wages and Strikes

We believe that the commissions should co-operate with the management in dealing with labor policies exactly as with the financial and technical phases of operation. But they should have final power to act in behalf of the public. They should work constantly to establish the best possible standard of wages, and other conditions, and to promote good will and co-operation between officials and the entire operating organization.

The commissions should have in view two main purposes: (1) To promote efficiency by stimulating interest in the work, establishing co-operation between all departments, and maintaining proper conditions of employment; and (2) to prevent interruption of service. The second is directly concerned with the public, but it depends largely upon the first. We can hardly go so far as to prohibit strikes outright by legislation. But we believe that they can be practically avoided through enlightened labor policies. For the sake of continuity of service, we must be prepared to maintain favorable working conditions. And to safeguard against strikes, the utilities must lead other industries in high standards of employment. The cost has to be borne by the public, but is likely to be less than under low standards.

We believe that the same commission which fixes rates and the standards of service, should have final control also of the major element of cost, namely, wages paid to labor. The costs of any labor policy, whether modern and efficient or medieval and incompetent, ultimately fall upon the public through rates and service. Consequently the commission which regulates rates should control directly the costs which enter into the rates. We have no doubt that sooner or later such direct power over labor conditions must be granted. Interruption of service is intolerable, and in some cases of great emergency the requisite power will be assumed and exercised by the public. Why not make the entire matter a part of deliberate and consistent regulatory policy?[1]

17. Conclusion

In conclusion, let us emphasize that the problem of efficiency is exceedingly important in public utilities.

To deal adequately with this problem, the commissions should have comprehensive power to obtain facts, study conditions, and to apply their knowledge and experience. For the most part, they would obtain the desired advances through friendly co-operation with the management. In any event, however, they should have full power to require all changes and improvements in the public interest.

There would be no unjustifiable or unwarranted interference with the management. The legality of the power would be definitely established by direct legislative action and there would be little doubt of its constitutionality so long as the investors are paid the returns to which they are entitled.

Actual interference with the management would depend upon the special circumstances. If improvements are available and the operating officials are not willing to follow suggestions, the commission would have power to order the changes made. In such a case the interference would be inevitable. With the utilities we have departed from the usual standards and modes of business, and we must go as far as the facts reasonably require. For the most part, however, direct orders would not be necessary. Mostly progress would be made best through co-operation between the public authorities and the management. And such co-operation would flow almost automatically from the institution of the proposed plan.

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[1] The repeated strikes and threatened strikes of railroad employees finally brought about the organization of the Railroad Labor Board under the Transportation Act of 1920. This board, however, has inadequate powers to deal effectively with reactionary conditions. It does not have the ultimate power to fix wages and other conditions of labor. Moreover, experience seems to have demonstrated that a separate board should not have been created; its function should have been placed with the Interstate Commerce Commission, which has control over rates, security issues, accounts, service, consolidations, co-operation and pooling in use of equipment and terminals, and other phases of operation. No good reason exists for the separate labor body; it does occasion cross-purposes with the Interstate Commerce Commission and prevents close co-ordination of regulatory powers.

CHAPTER XIV

STANDARDS OF COMMISSION ORGANIZATION

1. Plan requires good organization. 2. Lack of training and experience. 3. Political influence harmful. 4. Attitude of technical staff. 5. Appointments and tenure by merit. 6. Removal of politics practical. 7. Conflicting functions a problem. 8. Conflict could be narrowed. 9. Local commissions in large cities. 10. Conclusion.

1. PLAN REQUIRES GOOD ORGANIZATION

Under the proposed plan great responsibility would be placed upon the commissions. These bodies would have the immediate duty of making an appraisal of all the public utility properties and placing rate making upon a permanent self-operating basis. When this initial task is completed, they would have the large constructive duties incident to effective regulation; deciding upon additions and improvements, safeguarding financial stability, checking up the service, promoting efficiency of operation. These matters have been grossly neglected and can receive adequate attention only when the commissions are freed from the cumbersome deadlock of present rate procedure.

Because of these positive responsibilities it is necessary to place the organization of the commissions upon the highest possible standards. This would include not only the commissioners themselves, the manner of their appointment, their qualifications, their tenure of office, but also the heads of departments, technical experts and all employees engaged in the work. The entire organization must be selected and shaped to carry out effectively the purposes of regulation.

2. Lack of Training and Experience

One of the chief difficulties with our existing machinery of regulation has been the character of the commissions. With comparatively few exceptions, commissioners have been appointed because of political consideration, with little regard to their suitability for the positions. The same force has controlled to a very large extent also in the appointment of the principal executive officers, the legal staff, the secretaries, and often, also, the technical experts. In comparatively few cases have commissioners brought to their positions a background of training and experience which would aid in the administration of the office. Seldom have the newly appointed commissioners had any understanding of the problems with which they were confronted.

In many cases the new commissioners have not even understood the fundamental character of public utilities as distinguished from general business corporations. They had no notion of the significance of fair rates and reasonable service. They knew nothing of the technical procedure in rate-making. They did not comprehend the rights of the companies or the duty of the public to the investors.

3. Political Influence Harmful

Not only have the appointees lacked training and sufficient experience, but their principal interest after their appointment has been directed toward maintaining their political connections, rather than studying the problems and fitting themselves for the proper administration of their duties.

To those who have had extensive and intimate experience with commissions, one of the disheartening facts has been that in many cases the commissioners never do understand what their work is about even after being in office a number of years. This is not due to lack of requisite intelligence, but to the fact that they are interested in the political possibilities of their office, rather than in the grave problems of regulation.

As to sheer ability, there is no great ground for criticism. On the average the appointees have represented good and perhaps surprisingly high grade ability. Comparatively seldom have they been really inferior. But whatever their native ability, they have not brought a background of broad training and requisite experience to the positions, and under the conditions of their appointment they have inevitably focused their attention upon political ends, rather than upon problems of regulation.

A special political factor is the usual lack of tenure of office and of definite responsibility. Generally, a newly appointed commissioner realizes that his continuance in office does not depend upon the work that he performs, or on his personal development for the position, but upon his party's success in the following election. Consequently, his interest naturally centers in the political organization and tactics with which elections are conducted. Almost inevitably he devotes only the minimum time, energy and interest to the work, mainly relying upon his technical assistants to keep him informed of the various cases, investigations, and other important matters.

If there had been a more permanent tenure, so that continuance in office would depend upon performance, the appointments that have been made would have turned out more satisfactory. Even without highly desirable previous contact with public utility problems, they would have had opportunity and motive to become familiar with the work and absorbed in it. But individual commissioners as well as entire commissions have been frequently removed, not because they were particularly unfit, or because the change offered expectations of improvement, but purely because of shift in political control in an election.

Because of the political dominance and frequent changes in personnel, there has never been an accumulation of experience on the part of the commissions that would help materially in solving the problems of regulation and in performing the duties progressively from a public standpoint. One of the disheartening things in practice before commissions has been the necessity of repeating over and over the most elementary concepts. After nearly a quarter of a century devoted to active regulation, we still find that a large proportion of the commissioners do not understand even the primary principles. It is necessary to repeat the simple fundamentals and explain them each time in great detail in spite of the fact that they have been rehashed time and again before the various commissions.

There have been instances where commissioners have devoted themselves to their duties and began to grasp the public problems, but their acquired knowledge and experience offered them no protection. They were swept aside with changes in political control just like their associates who had not taken their responsibilities seriously. Very often, however, the commissioners have hardly realized the existence of special problems to be solved and difficulties to be removed. They have been complacent in their positions, seriously concerned only with the next election.

The entire organization has moved along in an unwieldy and cumbersome way. Investigations have been made and considered, only to have the same subject matter reinvestigated and reconsidered, without anything ever settled. Voluminous opinions have been repeatedly presented by successive commissioners. The same vague, perfunctory formulas have been pompously restated, without deciding anything, without advancing the solution of any problem, or placing regulation upon a more solid foundation.

4. Attitude of Technical Staff

These conditions have affected the entire organization of the commissions. In most cases the political appointments have not been limited to the commissioners themselves, but have included secretaries, counsel and often even heads of departments and technical experts. With every political change there were not only new commissioners, but also new appointees in all the important administrative positions. The results have been twofold: First, a marked slowing down of the work, because the new order had to learn at least the important routine of the job; and, second, the technical men on the permanent staff suffered repeated frustration of effort.

The last mentioned point may seem fanciful, but will be readily acknowledged as exceedingly important by those who have been close to commissions for a number of years. With every change of personnel there is a noticeable deterioration in the morale of the staff, including employees with permanent tenure. There is the feeling that for a long period nothing would be accomplished, as the main work would consist of training the new incumbents; also that there is no use in serious effort as immediately evidenced by the changes just made,—that the whole enterprise is political and good work does not count.

In spite of the political control at the top, the permanent staffs have been selected to a surprising extent from qualified lists, and the technical positions are largely occupied by individuals qualified for and interested in the work. This applies particularly to the engineers, accountants, statisticians and counsel where the appointments are non-political. The technical men have done a great deal in studying the problems, policies, and methods. Again and again, they have placed before the commissioners the difficulties with which they were confronted, and have pointed out improvements which could be obtained. They have struck, however, not only a lack of understanding and interest, but have had to place their ideas repeatedly before new commissioners or new groups, without result, till gradually they have exhausted their own interest and have tended to accept the situation without much concern.

It is, of course, easy to exaggerate the frustration of the permanent staff, but it has been exceedingly important. The technical men have gradually been forced by the conditions into the attitude that there is no use in trying to make constructive suggestions. To a large extent they have come to accept existing conditions as inevitable, and have surrounded themselves with administrative red tape by which they make their own positions tolerable, without worrying particularly about the public interest.

5. Appointments and Tenure by Merit

What is needed first of all is to remove the commissions from political control. The commissioners should have outstanding qualifications for their positions, and should devote themselves exclusively to their work.

When regulation was introduced it was difficult to obtain men with adequate training and experience. But now there is no such difficulty. In every commission there are lawyers, engineers, statisticians, accountants, who are not only leaders in their own technical fields, but have acquired a general point of view which should be utilized for the public benefit. At the present, therefore, it is possible to appoint as commissioners men of broad training, experience and a will to apply themselves wholeheartedly to the various problems of regulation.

A commissioner should be appointed for a long or indefinite term. He should not be removable except on charges and proof of malfeasance. The tenure of office, the salary paid, and other conditions should render the position sufficiently attractive to men with the requisite ability and experience who would devote themselves unreservedly to the work.

Similarly all other positions in the organization should be made practically permanent and lifted completely from political control. Every position should be filled on the basis of merit, without regard to political connections. This standard should apply to counsel, all administrative officers, and all technical and clerical positions.

There should be not only security of tenure, but also responsibility and recognition of service rendered; particularly there should be adequate salaries. Any man on accepting a position with the commission should be able to work for promotion as far as his ability will allow. He should be able to look forward to the time when he may become the chief of a department, or even to his appointment as commissioner merely through devotion to his work and development in his capacity to serve. In short, he should find room for a professional career.

6. Removal of Politics Practical

That such conditions are possible of achievement, is demonstrated in the organization of the Interstate Commerce Commission. The high ability and sense of duty of individual commissioners and the body as a whole have been generally recognized. Most of the commissioners brought into the office special experience that fitted them for their tasks, and the tenure of office gave them opportunity to develop for their particular duties.

At the present time there are eleven commissioners, no more than six of whom may be appointed from the same political party. They are appointed by the President, with the advice and consent of the Senate, for a term of seven years at an annual salary of $12,000. The terms of not more than two members may expire in any one year. High grade men have practically always been reappointed.

These comparatively favorable conditions have probably been a strong factor in procuring outstanding men for the positions. But the more fundamental fact is that the office has been regarded as so important by the general public that politicians have not dared to meddle. If a federal body can be safeguarded from political control, there is every reason to believe that state or local bodies could similarly be created and maintained on a high professional basis. The very addition of responsibilities under the plan would set off and emphasize the importance of the commissions, and would thus militate against low standards and political exploitation.

7. Conflicting Functions a Problem

Apart from the factors considered in the preceding paragraphs, there has been a further difficulty in the conflicting duties and responsibilities of the commissions.

Our entire system of government rests upon a threefold separation of functions: legislative, administrative and judicial. While in practice it is difficult to maintain throughout a rigid separation between the three, nevertheless, for the most part, our governmental organization has followed these primary divisions. The legislative function is to determine policies; the administrative to carry out the policies; and the judicial to determine the exact meaning and limits of the policies, as well as to decide between conflicting interests.

The commissions, however, are deliberately endowed with all three functions. In rate regulation, for example, they act primarily as legislative agencies. Rate making is a legislative act. This power has been delegated to the commissions and all rates fixed by them come from the exercise of this legislative authority.

Besides such direct legislative action, however, the commissions have also the direct responsibility of carrying into effect all legislative acts pertaining to regulation, including their own orders based on delegated authority as well as the positive requirements fixed directly by the legislatures. In this respect they are administrative bodies, and a large part of their organization is devoted to administrative duties. But they also exercise judicial or quasi-judicial functions in passing upon questions that affect the rights of the companies. In rate hearings especially the commissions have always found themselves in the conflicting position of appearing not only as legislative bodies whose duty it is to fix rates in the interest of the public, but also to pass upon the reasonableness of the rates in protecting the rights of the investors.

They have been compelled to conduct investigations and bring out facts for the purpose of fixing the lowest possible rates. But they had to consider the facts from the standpoint of the companies. They have inevitably been expected to act as the direct representatives of the public for the establishment of low rates, but have also had to sit as judges to determine the rights of the investors affected by such rates.

A commission which must sit in a judicial capacity cannot readily be unflinching in its duties to the public to obtain the lowest possible rates. There is little doubt that this conflict has caused the commissions to avoid the facing of perplexing responsibilities. On the public side, the commissions have avoided the starting of rate investigations as long as they could. Even if the facts justified a reduction in rates and were known to the experts, the tendency has been strong to do nothing until an active public insistence forced an investigation. Likewise, so far as the investors are concerned, the commissions have evaded as long as possible the demand for an increase in rates. The responsibility for changes, therefore, has rested practically upon the initiative of public officials and of the companies who could represent the public and the investors without judicial restraint.

8. Conflict Could Be Narrowed

To a considerable extent this conflict of functions cannot be avoided, but it should be understood and provided for. Under the proposed plan, it would be very greatly reduced, if not practically eliminated. After the initial valuation to determine the amount upon which a return should be allowed, the rights of the investors would be definitely fixed and the machinery for subsequent rate making would be practically automatic. The procedure would then be almost altogether administrative. Hardly any judicial questions would arise. Rates would be increased if required according to the showing of the accounts, and decreased if the reduction seemed desirable and could be made without endangering the return to the investors.

With such a clarification of rate making policies and methods, the conflict of duties would practically disappear. It would hardly arise even as to matters of service, extensions of facilities, or methods of operation. Practically the sole question in any case would be one of desirability, whether or not a particular change should be made; the financial interest of the company would scarcely ever be involved. The commissions would, therefore, be concerned primarily with their legislative and not judicial responsibility, and would be free to proceed as direct public agencies to bring about the best and most favorable conditions of service.

The effect of the opposing responsibilities may be limited also by frankly recognizing the facts and giving the municipalities full power to represent the public in all utility actions. At present the right of the municipalities to appear in rate cases and other proceedings before the commissions is limited and varies in the different states. To a large extent the cities have a right to appear only in cases where their own contracts or franchises are involved; or the principal officers may bring complaints as to excessive rates and other unsatisfactory conditions. But mostly their participation in the proceedings is on sufferance and not a direct right. Nor are they usually given access to company records, or to initiate independent examinations. In court cases they usually have no standing except by tolerance.

This situation should be changed. We should recognize the commissions' double functions, and grant to the municipalities directly the right of legal appearance both before the commissions and the courts in all public utility matters. It is a fact that local discontent with rates or service or conditions of the property is expressed mostly first to the city officials. It is natural that the people should look directly to their own elected officers for protection. This is practically inevitable, whatever form of organization may be employed. The people do expect their local officials to take the needed initiative in public utility matters.

The city officials, of course, are free in such actions from any judicial responsibility: They can present their case untrammeled with the consideration for the investors. They can direct their attention wholly to what is desirable from the public standpoint, exactly as the lawyers for the companies concern themselves exclusively with the interest of their clients.

Granting the cities the right to appear in all public utility cases would be a mere recognition of the fact that the people do expect their officials to lead in such actions. This would not interfere with the duties and responsibilities of the commissions. They would still have their technical departments to make the requisite investigations and to present the facts necessary for a reasonable determination and order. But in the course of the proceedings the municipalities would urge more actively all public considerations, unimpeded by any judicial responsibilities to the other side.

This direct public representation would be particularly important in the proposed initial valuations. The commissions would have a tremendous task in making the appraisals of all the properties. In each case a particular locality would be affected, and to make the appraisal satisfactory to all concerned, the local officials should have direct representation in the work. While the commission would have the final responsibility of determining the valuation, there would be great public gain if the cities had a direct share in establishing the facts and urging the various special considerations on behalf of the public.

9. Local Commissions in Large Cities

In some cases, to limit the conflict of duties, it may be desirable to create special local commissions. For a very large municipality, such as New York, Chicago, Philadelphia and others, there is little reason for a state commission. The properties, management, and problems of service are all concerned with the particular city, and there is no reason why regulation should not be local.

The two chief considerations in determining whether a local commission with full regulatory power should be created are (1) the cost, and (2) whether the utilities are limited in their operations to the municipality.

The organization of a local commission is, of course, limited by the expense. To organize and maintain an adequate staff is costly. The expense of intelligent and effective regulation can be borne separately only by the largest cities. In the smaller cities the costs would be prohibitive.

In regard to the second factor, consideration must be given as to whether the utilities are entirely local, or are extensively connected with operations in other municipalities. In the case of New York City, for example, practically all the street railways, the gas and electric companies are strictly of a local character, performing little, if any, service outside of the city limits.

Consequently, a New York City commission would not be involved with operations outside of its jurisdiction and would be amply occupied with local problems.

For the most part, however, public utilities are not limited to one city, but extend to outlying districts and serve a number of municipalities. Wherever there is inter-municipal service, with joint properties, operations and financial results, local commissions are impracticable. In most cases, therefore, apart from the expense, state commissions meet the requirements in the most satisfactory way. But each municipality should have the right of direct appearance before the commission in matters affecting the rates or service in its own territory and should have access to all necessary company records in preparing the case for the public. In the case of interstate utilities, besides railroads, where there are interstate investments, operation, service and costs, effective regulation demands that they be subject to the Interstate Commerce Commission.

10. Conclusion

If rate regulation is to be effective under any plan politics must be completely eliminated from the commissions. The conditions of the office must be commensurate with the responsibilities assumed to attract the calibre of men who would render efficient service. Above all, however, their duties must be explicitly prescribed and adequate powers delegated, which would permit them to use their discretion in the application of the enacted legislation to the different utilities.

The determination of a rate base for each of the existing properties would take considerable time. But once this is out of the way rate making would require comparatively little attention from the commissions.

Their ability and devotion to the interest of the public would be measured by the extent of their positive contribution to economy of operation and improvement of the service.

CHAPTER XV

FUTURE DEVELOPMENT IN PUBLIC CONTROL

1. No new principles suggested by plan. 2. Purpose to make accepted principles effective. 3. Territorial scope not an issue. 4. Plan not concerned with public ownership and operation. 5. Public ownership not an immediate solution. 6. Plan would facilitate solution. 7. Conclusion.

1. No New Principles Suggested by Plan

The proposed plan is not a radical change which would introduce unknown and untried principles and methods.

Regulation has become firmly established throughout the country, and has been carried out through existing statutes with elaborate organizations. The remarkable fact is that it has become universally established in a comparatively short time. While the right to regulate was recognized in *Munn v. Illinois* in 1876, active regulation has been provided for only since 1900. Since then, however, the regulatory statutes have been extended practically to every state, and the system today is all but universal.

But in spite of the wide prevalence of regulation, with extensive and costly machinery, the results have been unsatisfactory. Under the plan, the general principles underlying the existing statutes would remain undisturbed. We should merely state the policies explicitly, create workable machinery and proceed upon stated facts which are beyond dispute. In general outline, we propose nothing that is new. We urge only the adoption of concrete policies and methods by which the accepted purposes of regulation may be rendered effective.

2. Purpose to Make Accepted Principles Effective

In this discussion we have made no assumption whatever as to any particular future development in the relation of the public to the utilities. There has been throughout only the realization of growing discontent with regulation, and the purpose has been merely to suggest measures that would remove the causes of the discontent.

Whatever the future developments may be, one thing seems certain: There will be no return to the freedom of ordinary competitive enterprise. If railroads or other utilities believe that with the breakdown of regulation they will be permitted to return to their old status, and manage their business without public regulation, they are out of touch with conditions and the spirit of the times. There is no possibility that they will ever be given greater freedom than they have at the present time. If regulation breaks down, the chances are overwhelming that it will be replaced not by turning the management back to the companies free from public control, but by greatly extending the control or by taking the properties and instituting ventures which will have their own problems and uncertainties. A collapse of regulation would call for radical proposals which are untried, and probably costly and unwise.

The proposal contemplates proceeding with and perfecting what we have. The underlying principles of regulation are sound, and they have been established and accepted by both the legislative and judicial branches of our government. They are based upon the public interest. We need only definite policies, methods and facts by which these principles can be made effective.

3. Territorial Scope Not an Issue

Two alternative courses have been actively supported to replace the present system: (1) The extension of local or municipal control, and (2) public ownership.

As to the replacement of state by local regulation there is nothing in the proposal against the change wherever it may prove desirable on its own merits. In the preceding chapter the suggestion was made that in the case of large cities it may be desirable to establish local commissions. But otherwise it seems doubtful whether state regulation should be replaced by municipal control. The objections as already intimated are twofold: (1) The costliness of local regulation, and (2) the interurban operation of the properties. For these reasons it seems that state-wide control is the only effective system. The cost can be readily absorbed by the wider jurisdiction, and all the companies can be brought under the same commission. In the case of railroads, effective control is national, and the same is true of individual other utilities that are not confined to a single state in their operations and calculation of costs.

But there is no reason why in any case the question of local control may not be raised. Wherever a community prefers to have its own commission and is willing to bear the cost, there is no reason why, under the legislative sanction, local regulation should not be provided. If not, then the right of local appearance should be granted. In any event, however, the plan would provide the basis of effective control.

Whether regulation is carried on by a state-wide commission, by a local body, or by an interstate organization, the work must be based upon definite policies and clear-cut methods. Our proposal, therefore, would apply to local, state, and national commissions. Whatever territorial adaptations we may make, we must proceed to place the processes upon a definite and workable basis.

4. PLAN NOT CONCERNED WITH PUBLIC OWNERSHIP AND OPERATION

As to public ownership and operation, it is not our purpose either to defend or oppose it. As a policy it must be judged upon its own merits. While the movement has gained rapidly in recent years, its popularity has undoubtedly been due in large measure to the discontent with the existing system. With its general desirability, therefore, we are not concerned. But we are interested in removing the immediate conditions which seem to have given impetus to the public ownership development.

To the extent that the demand for public ownership springs from mere dissatisfaction with inefficient regulation, the movement is artificial and would be checked by the introduction of definite policies and workable methods. But if public ownership should prove desirable on its own merits, there is nothing in our proposal to prevent its general adoption. The realization of the plan would afford opportunity for unbiased consideration of the policy in general and its application to the various utilities under varying local conditions.

5. PUBLIC OWNERSHIP NOT AN IMMEDIATE SOLUTION

While it is not our purpose to discuss the general desirability of public ownership and operation, the point should be made that in any event its extension is bound to be a somewhat slow process and will depend upon various local considerations. So far it has not been tried extensively except in relatively small properties and simple utilities. Regulation on the other hand is almost universal, and all that is necessary is to remove uncertainties and to base it upon definite policies and effective methods.

The extension of public ownership and operation is difficult because of the local variations, which cannot be met by general legislation. There are great differences in the local franchises and privileges granted to individual companies operating in the various municipalities. Moreover, there are special agreements or contracts between the municipalities and the companies, which interfere with immediate public acquisition. All these franchise and contractual conditions will require time before general public ownership could be introduced in many of the cities. Such settlements are always slow of realization.

Perhaps a greater obstacle to immediate public ownership is the purchase price. If a comprehensive program were to be undertaken, there would be general condemnation of properties for public purchase. This would raise many constitutional questions, and undoubtedly would place a heavy burden upon the communities so as to make successful operation exceedingly difficult.

The alternative course to general condemnation would be through negotiation between municipalities and the companies. Experience in such negotiation, however, shows that the course is drawn-out and, without power of compulsion by the public, the final price is likely to be excessive.

Besides the franchises, contracts, and purchase price, there is also the financial difficulty on the part of the cities. In most cases it is doubtful whether the municipalities would have sufficient credit to purchase all the properties outright. Either some new public organization would have to be provided to do the financing, or the fundamental law would have to be revised so as to furnish adequate borrowing capacity to carry out the project. But such changes would require time and would involve so many various conditions that the general introduction of municipal ownership, even if desirable, could not be seriously considered as an immediate policy.

Municipal ownership, as such, would, of course, be almost impossible in the case of companies owning and operating properties as a single system extending through a number of cities or several states. This applies to many railway systems, telephone and telegraph properties, and increasingly to electric light and power, with the rapid central station and holding company developments. In all such instances, where a large proportion of service is intermunicipal or even interstate, where the processes and costs of operation are intermingled, and where the larger scope of organization is more economical, municipal ownership and operation would be naturally futile. As public undertakings, we should have to consider state or federal ownership and operation. But these forms of organization would present their own problems and could not be offered as a comprehensive solution of the problem in the near future.

There would also be political obstacles. In every case, the issue would be befogged by all kinds of cross purposes. It could hardly be placed squarely before the people to be determined on its own merits. And finally there would be the problem of keeping the operating organization from political control.

6. Plan Would Facilitate Solution

Whatever the immediate effects, the plan would ultimately facilitate the solution of the ownership problem.

The regulatory statutes are general, and so constructed as to meet fundamentally all conditions. The proposed modifications would likewise be universal and would not depend upon local franchise, contractual, and financial variations. They would be brought about by state-wide and, in the case of the railroads, and a few other utilities, by national legislation.

If, however, at any time, the question of public ownership and operation is brought up for local determination, there is nothing in the plan to prevent its adoption. Our view is that all the utility statutes should provide full power for any community to acquire its own utilities and to operate them according to local expediency. But whatever the particular circumstances of acquisition, the plan would already have established definite facts as to investment, earnings and comparative efficiency which would be used as a basis for purchase. To the investors it would be practically immaterial whether they received a fixed return under regulation or obtained a reimbursement of their principal from the municipality to be invested in other enterprises.

Thus, it seems clear that the plan, on the one hand, would slow down the extension of public ownership and operation by eliminating the condition of dissatisfaction with regulation. On the other hand, it would ultimately make the transition to public ownership much easier, if the change, on its own merits, should prove to be desirable.

7. Conclusion

After a twenty-year struggle with rate regulation the public authorities today are scarcely in a better position than when they started. During these two decades they have conducted endless investigations, caused the expenditure of hundreds of millions of dollars, piled up mountains of records and opinions; and mostly have not reduced rates when fairly justified, nor advanced them when reasonably needed. They are all but helpless before the huge task of prescribing rates for the many utilities operating under greatly varying conditions, rapidly shifting prices and tremendous transitions in industrial organization—unless principles and policies of regulation are definitely established and exact methods prescribed.

If we really desire effective rate regulation, it can be made practically an automatic process. What is needed is action under adequate legislative authority. This is not a matter for the courts. All the latter can do is to state clearly by what standards the constitutionality of legislative action would be measured, and the Supreme Court has indicated the ultimate limitation upon the legislative prerogative.

For automatic rate control, we need first of all an appraisal of existing properties used in the public service to determine once for all reasonable and definite sums entitled to future return. When such valuations have been made, the results in each case should be taken upon the books of the company. Subsequently all additional investments should be added to the initial valuation. Thus, the rights of the investors and the obligation of the public would be at all times shown by the accounts.

This undertaking can be readily carried out without grave financial and physical difficulties, but when once accomplished it would render rate making a simple process. It would set the commissions free to make positive contributions in economy of operation and improvement of service.

We face a question of paramount public importance: Shall we establish definite policies and workable methods of regulation, or continue under the existing cumbersome and extravagant systems, with the danger of being precipitated into a course not deliberately adopted on its own merits?

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